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The innovations that are about to supercharge computing

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LABS-TESTED!

CLOVERTOWN

We test Intel's monster new quad-core server!

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06

apc FREE SOFTWARE DVD ROM

JUNE 2007 / Vol 27 - No 6

SOFTWARE / SECURITY / PLAYABLE DEMOS / LINUX



ubuntu

Full Version

NEW VERSION!

The much-awaited, latest release of Ubuntu 7.04. Includes data migration for Windows, better networking, easier installation of drivers and software, better help system and more hardware support.

CD burner required. For x86-based PCs. No technical support provided by APC.

RED FLAG LINUX

CHINA'S OFFICIAL OS

Just-released desktop version 5.0 for our Chinese-speaking readers. This is the mother of all OSs, supported by the Chinese government as the alternative to Windows.

CD burner required. No technical support provided by APC. Chinese language only.

Full Version

SHIPPED TO AUSTRALIA SPECIFICALLY BY APC



RUN MULTIPLE OSs AT THE SAME TIME!

MICROSOFT VIRTUAL PC 2007 / MOKA5

Full Version

With these two tools you can simulate multiple computers inside of Windows. Great for testing out the latest Linux distros, browsing the web securely, testing software and more!

DAWN OF MAGIC

Try out this hack 'n' slash, third-person RPG.

For Windows 2000/XP.

PLAYABLE DEMO



AV WEBCAM MORPHER

Add video and audio effects to your webcam feed.

Online registration required before 16/08/07.

Full Version



PC RESCUE SYSTEM

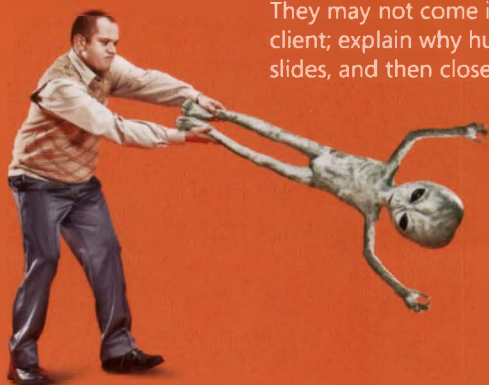
SystemRescueCD boots straight from this DVD!

For x86-based PCs. No technical support provided by APC.

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4. Try negotiating. (Or not.)

They may not come in peace, but they are advanced. Pitch them as you would a client; explain why humanity should be spared in under 50 Microsoft® PowerPoint® slides, and then close the deal. Or just grab their feet and spin them around.



5. Play dumb, then run.

The Aliens may have no idea who's in charge. Tell them squirrels rule the Earth, and we humans are their slaves. When they start trying to negotiate with the squirrels, run and hide.



6. Fight dirty.

No one will blame you if you fight dirty. Against their superior weapons and superior intellect, you may need to scratch, kick, bite, play dead, or even apply an intergalactic "noogie". Our wedgies, however, are useless against their super-advanced alien undergarments.

protecting your company against extraterrestrial invaders? easy.

1. Call the Army, the Navy, and the Discovery Channel.

They'll all want to know. They may swoop in and take over the situation, but then it will be as much their problem as yours. They are experts, they have high-tech gadgets designed to handle this kind of thing, and maybe they can help.

2. Steal the keys to their spaceship.

It sounds desperate but it just might work. When they realise they're stuck here they may mellow out and try to work it out instead.



3. Sneeze on them.

It's likely Aliens have different immune systems from our own. Which means even the common cold could be deadly. Sneeze and cough in their direction, and spray when you talk—even if they are immune they may be grossed out enough to leave anyway.

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taking on an alien invasion. easy.



taking on hackers. easier.

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Forefront™



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BREAKTHROUGH TECHNOLOGIES

THE INNOVATIONS THAT ARE ABOUT TO SUPERCHARGE COMPUTING



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ubuntu

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When you see this icon throughout APC, it means bonus software included on the cover disc.

This logo indicates a free, complete and unrestricted software package, available only on APC's cover DVD.

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AV WEBCAM MORPHER

Add video and audio effects to your webcam feed.



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apc editorial



TONY SARNO

I'm still amazed that Microsoft's new Chief Software Architect, Ray Ozzie (of Lotus Notes fame), spelt out the facts so clearly last year. He told an audience in the US that the world was moving from a PC-centric to an internet-centric universe. At the time, Microsoft was about to release Windows Vista, so people did not pay that much attention to the statement. If actions speak louder than words, then the release of Vista — a desktop operating system that keeps the PC at the centre of the universe — appeared to contradict Ozzie. But, of course, Ozzie was right — and it's becoming more evident by the day.

Exhibit A: the collective yawn that greeted Vista this year. Those of us who've watched previous Windows launches installed the new OS knowing it was raising the bar once more for PCs. Despite the naysayers, Vista also does that, but this time it simply failed to generate excitement.

Why? Because the internet is now where applications are making the really big strides forward. Fast broadband and the arrival of Web 2.0 technologies mean it's now possible to deliver software-like functionality to the desktop via the net. With more and more users discovering the power of web-based collaborative applications, standalone desktop applications are, by comparison, expensive, bloated, deskbound dinosaurs — and the

traditional software companies know it. Almost without exception, they are stampeding to convert their desktop applications into web applications and services.

Exhibit B: the ease with which you can access the net without the PC — with smartphones and games consoles.

What it all means is that the PC and its faithful desktop OS are no longer the only gateway to computer applications and communications. Suddenly, the world is no longer PC-centric, and life beyond Windows is something all the major players are desperately trying to figure out. This is our cover story, on page 72.

And, speaking of competition for Windows, we feature an unusual DVD offering this month: Red Flag Linux, China's official Linux distro, for our Chinese-speaking readers. We talk a lot about Linux distros in APC, but, I can assure you, this is the only Linux that has a superpower as a shareholder. The Chinese see it as their alternative to Windows, and if you look at its user interface, you can see why: it's almost an exact replica of Windows. It's impossible to download from the net, so APC's Dan Warne brought it back from Beijing, where he obtained an official copy from Red Flag. An English version is due in a few months, so, in the meantime, if you speak Chinese, install it and let me know what you think.

tsarno@acpmagazines.com.au



TRADITIONAL SOFTWARE COMPANIES ARE STAMPEDING TO CONVERT THEIR DESKTOP APPLICATIONS INTO WEB APPLICATIONS

JUNE AWARDS



We reserve the Editor's Choice award for the very best products available on the market.



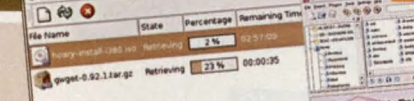
APC's Highly Recommended award is bestowed upon products that are of great overall quality.



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imagine true togetherness

Imagine the perfect wide-screen monitor designed for Windows Vista™

The Samsung SyncMaster BW series were developed, right from the start, in collaboration with Microsoft to deal with the multi-tasking demands of the new Windows Vista™ operating system. The Samsung SyncMaster 931BW, 206BW & 266BW all offer very fast response times, high contrast ratios and HDCP compatibility for powerful video and graphics performance. Add to all that, the glossy black curves and elegant design. With Samsung's new Vista-Ready Wide Monitor, it's not that hard to imagine. To learn more visit samsung.com.au



Samsung SyncMaster **Wide Monitor Series**





SP1 enough to save Vista?

There's more behind the first update than mere patching.

Windows Vista Service Pack 1 will be available between October and December of this year. Service Pack 1 will bring new features, but they're not the full story. Rather, with the release, Microsoft is eager to reassure business customers nervous about Vista that the new OS is solid, stable, dependable and well-supported. In fact, many interpreted Microsoft's announcement that it was looking for corporate beta testers for Vista SP1 (before it launched a consumer version of Vista) as part of this campaign. This was despite Steve Ballmer claiming there wasn't a target date for the release of SP1.

What Microsoft says about SP1 even now doesn't make it sound

like a high priority. A Microsoft spokesperson told us: "It's too early to provide any firm date range for SP1's delivery. We will continue to take customer feedback and will determine an official delivery date as the service pack is nearer to completion. In general, we expect the first service pack for Windows Vista to be released in a time frame similar to that of service packs for previous versions of Windows."

This will put it between October and December, allowing the same eleven months after shipping as we saw with XP's first service pack. In fact, it will come out with (or soon after) Longhorn Server, not simply catching up with the developments in Longhorn, but switching in the new code.

The changes Microsoft has already talked about for SP1 are mainly concerned with managing group policy. The Group Policy Management Console will have keyword searching and filtering, so you can look for a specific policy, see what's been applied already, or see what policies are available for your specific system. There will be new templates for applying sets of group policies, and a central store for policy settings across the whole domain. With another 1,200 policy settings in Vista, it's about time we got more management tools, but this isn't something you would delay upgrading for.

SP1 isn't going to come out until Longhorn Server ships,

because it depends on it: that means plenty more patches and hot fixes to roll into it.

Want new features for Vista straight away? You'll have to buy the Ultimate Edition and be satisfied with the 'free' extras.



Hard disk failure scare

Two independent studies find manufacturers' claims unrealistic.

Hard disks that promise years of reliable service could grind to a halt sooner than you may think, according to two separate studies.

Carnegie Mellon University found that disk failure rates were up to

13 times higher than manufacturers' figures claimed. Meanwhile Google's analysis of its own server racks discovered a large increase in failure rates after just two years of service.

The industry standard measure of disk reliability is mean time between failures, or MTBF. Researchers at Carnegie tested 100,000 drives from various manufacturers, using standards such as SCSI, SATA and Fibre Channel and discovered a big difference between MTBFs and real-world reliability. For example, while Seagate's MTBF

figures for its Cheetah X15 drive suggests an MTBF of 170 years, Carnegie researchers say that nine to 11 years is more realistic. Overall, Carnegie found that drives failed between two and 13 times more often than their MTBF ratings suggested — and that the average lifespan of a drive was six years.

Over at Google, engineers analysed their own extensive disk failure records, which cover more than 100,000 serial and parallel ATA drives. As expected, they found evidence of early faults — badly made hard disks failing at the beginning of their life — but they also discovered that failure rates increased quicker than expected. Failure rates increased from 1.7 per cent in year-old drives to eight per cent in year two, 8.6 per cent in year three, with rates hovering between six and eight per cent in years four and five.

Google also found that in 36 per cent of failures, SMART (Self Monitoring, Analysis and Reporting Technology) systems that monitor disks for signs of impending doom didn't predict any problems. However, that doesn't mean SMART is useless: drives were 39 times more likely to fail within two months of SMART reporting a scan error than if they were error-free.

Both studies indicate that the prime factor in hard disk reliability is not technology, heat or usage: it's age, and given that MTBF figures are the result of testing in perfect, clean room conditions, it's no surprise that, in the real world, drives don't last as long as they do in the labs. It seems that, like laptop battery life and Vista's minimum system requirements, MTBFs should be taken with a pinch of salt.



Intel's internet mini-tablet

WITH LINUX!

David Flynn gets his hands on Intel's first Linux-powered internet pad.

Like the idea of a compact net-friendly tablet but can't stand the thought of weighing it down with Windows? Intel reckons it has the answer: a pint-sized Linux pad.

Ignore that it's currently lumbered with the unwieldy moniker of the mobile internet device (or MID for short). This is about as clunky as it gets.

Commercial products won't hit the market until next year, but APC got its hands on the first proof-of-concept unit — and we reckon that if the price is right, it's worth the wait.

Mobile internet devices and ultra-mobile PCs sit side-by-side in Intel's new Ultra-Mobile 2007 platform. The UMPCs are similar to today's crop of compact Windows-powered slates but MID units are smaller again, with wide-screen displays of 4-6in (running at 800 x 480 or 1,024 x 600). The target

audience is described as consumers and 'prosumers', instead of the UMPC's narrower appeal to mobile professionals.

Most significant, however, is the operating system. Intel is at pains to point out that the hardware *can* run Windows, but its choice of Linux as the primary OS for the product's media debut is a clear slap in the face for Microsoft. The scope for highly optimised Linux builds, as opposed to Windows, is central to the MID's lightweight hardware spec.

The first internet tablets will run on tweaked versions of the ultra-low voltage Pentium M, codenamed 'Stealey', running at 600MHz and 800MHz with a 400MHz front-side bus and up to 1GB of DDR2 memory, partnered with a special version of Intel's 945GU Express Chipset with support for flash drives.

The target storage footprint for

the OS is below 512MB, which opens the way for a speedy flash-based OS. Some devices will sport a meagre 256MB of RAM, although we expect 512MB to be more common.

The second-gen ultra-mobile platform (codenamed 'Menlow' and due in mid-2008) will employ more advanced 'Silverthorne' CPUs (based on the same 45nm process as the Penryn processors).

Two vendors have already signed up to provide the pared-back penguin OS for mobile internet devices: China's RedFlag and Canonical, creators of the popular Ubuntu Linux. In a move which will have Microsoft even more worried, both these bespoke distros will also be offered as Windows alternatives to UMPC vendors.

We fired up a prototype MID powered by a humble Celeron M chip and running RedFlag's new

MIDINUX OS, and were knocked out by the responsiveness of the OS.

The streamlined yet elegant interface has a row of shortcuts to the most-used applications at the bottom of the screen. Above this sits the main launcher, with two rows of icons and small arrows which scroll the icon set across the screen. The title bar contains application-specific data as well as icons for battery power, wireless activity, volume and other system settings.

While MIDINUX will be available only to developers and device manufacturers, RedFlag says it will release all open source components into the community, and Intel will encourage the Linux community to drive MID optimisations into the OS.

BlackBerry surprise

If you're one of those people who has to be online, even on the bus, you might feel for the BlackBerry users in the US who in April found themselves suddenly without the ability to receive emails.

The outage had something to do with some type of code being applied to the BlackBerry system. It didn't go to plan. Reports vary, but the email service went down for as long as 12-14 hours. Australian users were reportedly not affected.

Five years ago this mightn't have been such a drama, but BlackBerry now has 8 million

users. For the financial quarter ending June 2, the company expected to earn over US\$1 billion in revenue.

The fact BlackBerry's US operations route through one data centre must now be raising a few eyebrows.

An email glitch left BlackBerry users in the US off-air for hours.



Want to nominate a dumbest moment in tech?
Send an email with the subject line "Dumbest Moments" to dwarne@apc_magazines.com.au. All correspondence becomes the property of APC.

Currently in Beta and available to paying Photobucket customers, online service Adobe Remix is based on its video editing tool Premiere.



Adobe apps go online

Photoshop Online paves the way for premium web services.

Adobe has announced an online, advertisement-supported version of Photoshop for launch in six months' time. Joining Microsoft and Google in the web service market, Adobe's move heralds a transition in the way we use our PCs and pay for software.

The announcement comes shortly after Google launched a Premier Edition of Google Apps, a subscription service that includes Gmail, Google Calendar and Google Docs accessible through a custom domain. Microsoft already has Windows Live Mail services up and running in beta, with calendar, notes and contacts synchronised with your desktop.

Applications that run on the web instead of your local machine could soon take over. Microsoft chief software architect Ray Ozzie calls this the "first wave": online services targeted at consumers, with subsequent waves bringing software to small businesses and corporate enterprise. We already have email and office tools. Tomorrow we'll have Photoshop. And after that? Every application you need could be online.

Following a model that's been refined by the web's leading content providers, you'll pay for the applications as you use them. Reduced services are supported by advertising, premium offerings require a subscription. It's a model that's now successfully implemented across the web.

ADOBE VS MICROSOFT

Technological changes in the last few years have made the 'pay as you go' web a possibility. Broadband web connections are a major factor, providing the bandwidth for rich media applications. Meanwhile, Microsoft and Adobe both have interests in platform technologies for creating and deploying web applications. Adobe has the Flex platform, capable of bridging between Flash interfaces and just about any back end.

Microsoft leads with .NET, a set of interoperable technologies designed for online application creation. The main difference between the two is that Adobe's offering is cross-platform, while Microsoft.NET needs Windows.

Google, meanwhile, uses open technologies to create and serve its applications.

The battle is reduced to one between open standards and audience share. Microsoft has the largest share, with around 94 per cent of the desktop operating system market sewn up. Adobe and Google's tools work anywhere. In past skirmishes, Microsoft may have emerged triumphant — but this time, Windows may not provide sufficient leverage. If all you need to launch an application is a web browser, then any web browser will do. The next logical step from there is the web browser as operating system — an idea that's been around since the mid-1990s.

Once the file system has been moved from the client, users will be able to tailor their experiences. The future will see consolidated bundles offered online — Windows Live and Google Apps are first steps towards that — but Photoshop Online Edition shows that we'll have alternatives. We'll be able to pick and mix from the best that's on offer. Real competition may finally be coming to the desktop.

THE (A)PC REVOLUTION

October 1987

CIPHER 5400... IT'S LIKE PUTTING YOUR DATA IN THE BANK

Back in 1987 we were already taking backup seriously with products like this 60MB tape backup system. The slogan? "Disc backup with Cipher really is as safe as putting your data in the bank". We're willing to bet some tape users might disagree.



THE AMIGA 500...

"Buy tomorrow's computer today.

Specs include:

- 512KB RAM multitasking
- Analog RGB video output with 4,096 colours
- Stereo audio outputs
- Additional optional external 3.5 or 5.25 disk drives"

HERE IT IS... DATADESK'S TURBO-191 ENHANCED KEYBOARD

Today it looks like one of millions of keyboards, but in 1987 it was revolutionary. Just check out the specs: enlarged shift keys, two Ctrl and Alt keys, isolated escape key, extra-wide return key, 12 function keys — plus, lights for the Caps Lock, Num Lock and Scroll Lock. Get excited!

HOW PHOTOSHOP ONLINE WILL WORK

Photoshop Online Edition will shake up the burgeoning market in online image editors. The Adobe tool is likely to have a Flash front end, built using Flex middleware. This will make it a direct competitor to Fauxto (www.fauxto.com), a Flash-based Photoshop clone. Free and currently in beta, the tool cheekily mimics Photoshop's layout and features. Then there's the very Web 2.0 'Picnik' (www.picnik.com) — Flash-powered again and with Flickr integration,

but with a tabbed workflow. While these and other tools like the Ajax-based PNX8 (www.pixenate.com) boast great functionality, they may struggle against the peerless Photoshop brand.

Flash-powered clone Fauxto borrows liberally from Adobe's interface.



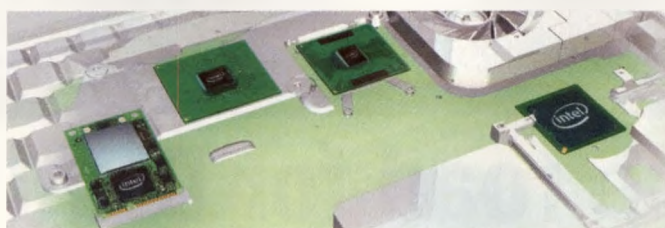
Intel revs next-gen Core and Centrino platforms

New Penryn processors are the first step to replacing Core architecture, while new Centrino Pro notebooks inherit Intel's desktop vPro tech. *David Flynn reports.*

Intel plans to live up to its 'Leap ahead' mantra, catapulting its silicon to the next stage of its evolution. It starts with a high-momentum plan to introduce a new CPU microarchitecture every two years and a new family of processors in every alternate year. Stephen Smith, vice-president and director for Intel's Digital Enterprise Group, calls it a 'tick tock' system.

"For the beginning of each silicon generation, we have a processor that's derived from the prior generation, and that's the tick," explains Smith. "Then we have a product that's the larger step, what we call the tock, which is a new microarchitecture. We're set up to deliver a new microarchitecture every two years."

Towards the end of 2007 we'll see that 'tick' in the shape of a series of processors codenamed Penryn. While built for the Core microarchitecture, they will be cast



on Intel's first 45nm die, which is claimed to deliver higher performance and efficiency than the current crop of 65nm Merom chips.

3GHZ, QUAD-CORE AND MORE

Penryn processors will likely exceed 3GHz in their two-year lifespan, with the first chips ramping up the Level 2 cache to 6MB in desktops and notebooks and a meaty 12MB slab for quad-core servers.

The chips will be tuned to boost virtualisation with faster 'transition' times as each virtual machine is created and closed. Single-thread

apps that occupy only one of the CPU's two cores while the other remains idle will receive extra processing muscle.

Smith suggests that Penryn could even usher in the era of quad-core desktops and possibly even notebooks. "We expect (desktops and notebooks) to remain dual-core for quite some time, although we expect quad-core to slowly move through the desktop segment first with performance desktops, and the mobile segment obviously later".

With Penryn providing the 'tick' in 2007, 2008 will see the 'tock' as Intel launches a new 45nm-based

microarchitecture codenamed Nehalem. Smith describes it as "the biggest leap in system design since the Pentium Pro about ten years ago."

Intel's roadmap sees the process continue in 2009 with the release of its first 32nm 'Westmere' processors for Nehalem-based systems.

CENTRINO GOES PRO

Intel's other leap this year takes place on the laptop platform, with the fourth revision of the Centrino mobile spec, codenamed 'Santa Rosa', in early May. Santa Rosa notebooks will deliver DirectX 10 with integrated graphics and also support the Draft 2.0 spec for 802.11n wireless, which Intel will promote as Next-Gen Wireless-N.

Intel will also weave its built-for-business vPro management desktop technology into notebooks, which will sport the new Centrino Pro brand.

MOST DANGEROUS PLACES ONLINE

Depending on where a web site is hosted, you could receive more than you bargained for. . .

TOP 5 SAFE AND DANGER ZONES

Internet security firm McAfee has released a detailed map showing how internet security varies around the globe.

The tiny island of Takelau, whose domain carries the '.tk' indicator, was found to be the most dangerous place to visit online.

You will, however, be safer visiting Colombian cyberspace than logging onto a Canadian or American site. Visit www.siteadvisor.com/studies/map_malweb_mar2007.html for the interactive map.

SAFEST PLACES

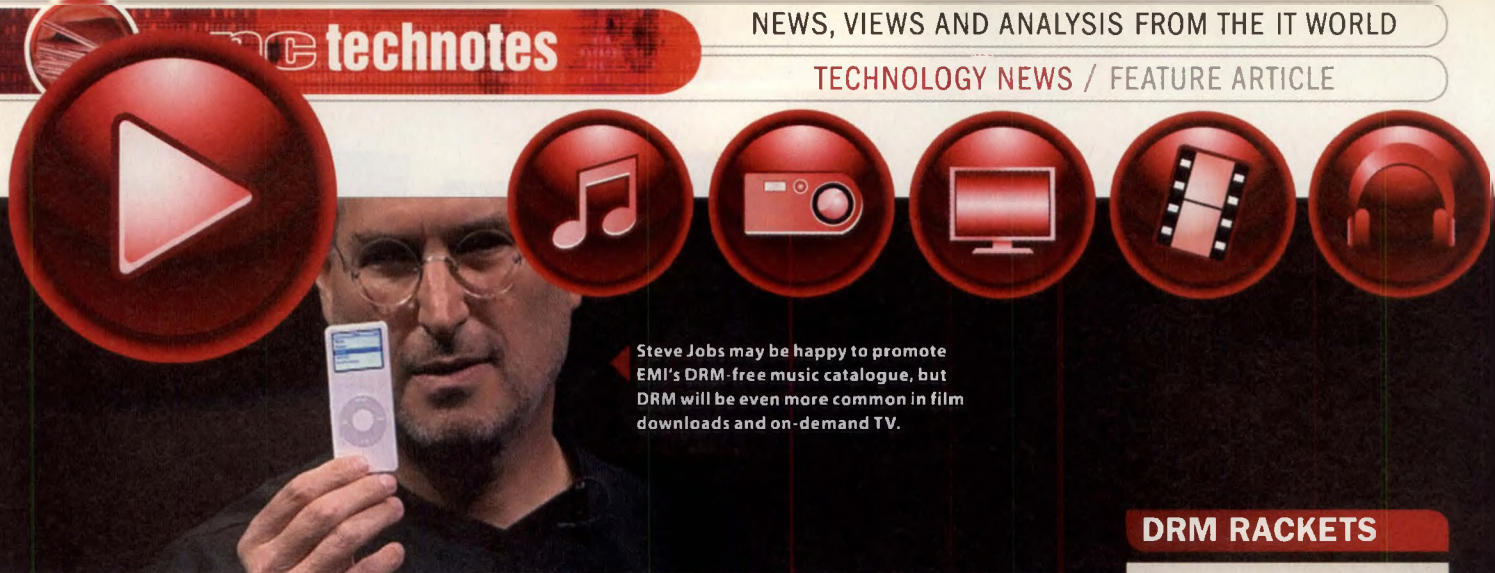
- 1 Finland FI
- 2 Ireland IE
- 3 Norway NO
- 4 Iceland IS
- 5 Sweden SE



MOST DANGEROUS PLACES

- 1 Tokelau TK
- 2 Romania RO
- 3 Russia RU
- 4 Slovakia SK
- 5 People's Republic of China CN





End of the road for DRM

EMI drops digital rights management – will its rivals do the same?

Record labels are singing a new song, and it goes like this: down with DRM! From May, EMI will offer DRM-free downloads via Apple's iTunes store. Unlike existing iTunes offerings, they'll work on any device that supports AAC files, they don't limit how many PCs you can use them on, and you can burn them to CD as many times as you like.

The songs will be slightly more expensive than current downloads — US\$1.29 per song instead of US\$0.99 per song — but they'll also have a much higher bit rate, which means vastly improved sound quality. Although the price per song has increased, the price for albums hasn't, which means DRM-free albums will be much better value for money than their crippled cousins.

So is this the first crack in the DRM dyke? Yes, but it's a very little crack. While iTunes will offer DRM-free downloads from EMI, it will continue to flog DRM-protected tracks too, and Steve Jobs has already stated that DRM-free iTunes movies aren't on the cards. That's because content owners simply won't sanction certain services if DRM isn't present — not just movies, but subscription music

services too. Music subscription services (in which you get unlimited tracks for a fee each month) don't work without DRM. For example, Napster, a US-based music subscription service not available in Australia charges US\$9.99 a month for unlimited downloads from its music library, because it knows the DRM prevents those tracks from becoming permanent parts of people's record collections. Drop the DRM, though, and you're offering permanent purchases — hundreds or even thousands of tracks for the same price as ten iTunes downloads. Would the record labels sanction such a service? Not a chance.

DRM-FREE MUSIC ONLY

EMI's move will be copied by its major label rivals, but only because music is a special case: protecting tracks with DRM doesn't make sense when 90 per cent of music is sold on CD, often for less money than the equivalent digital downloads. As a result, DRM does nothing to prevent piracy: it penalises legitimate customers and makes digital downloads poor value compared to cut-price CDs from K-Mart.

However, that's not the case

with other kinds of media. For example, every DVD is copy-protected, most software now requires product activation and most games need the original CD or DVD to run, and in each of those cases we would expect their online equivalents to retain copy protection too. DRM may be disappearing from music, but, if anything, the next 12 months will see DRM becoming more common. It's on every HD DVD and Blu-ray movie, and it's built into every copy of Windows Vista. And of course, it's on every iTunes movie — and that's not going to change any time soon.

Steve Jobs' focus on DRM-free music is telling: with more than 100 million iPods sold and the most popular music shop on the entire internet, Apple's market dominance enables it to ditch DRM on its music downloads without damaging its bottom line. However, while Apple is the big fish in digital music, in movies and other forms of downloadable content, it's a very small fish in a very big and, potentially, very profitable pond. Locking iTunes tracks to iPods didn't do Apple any harm in the early stages of digital music, and locking iTunes movies to Apple hardware won't do it any harm now.

DRM RACKETS

DRM isn't going anywhere soon.

Sony

DRM in: music, movies, games, ebooks, hardware and software.

Everything that can possibly be copy-protected is, whether it's a music download or an entire ebook. Sony's Blu-ray next-generation DVDs have particularly fiendish DRM.

Apple

DRM in: music, movies, games, hardware and software.

All non-EMI content is still copy-protected and iPod-only. All iTunes movies are copy-protected too and, to date, Apple has refused to licence its DRM to others.

Microsoft

DRM in: music, movies and software.

It has vague plans to offer DRM-free music but, for now, downloads — including Xbox 360 TV and video content — are DRMed. Most of its software now requires online activation and DRM is built into Vista.

Valve Software

DRM in: games.

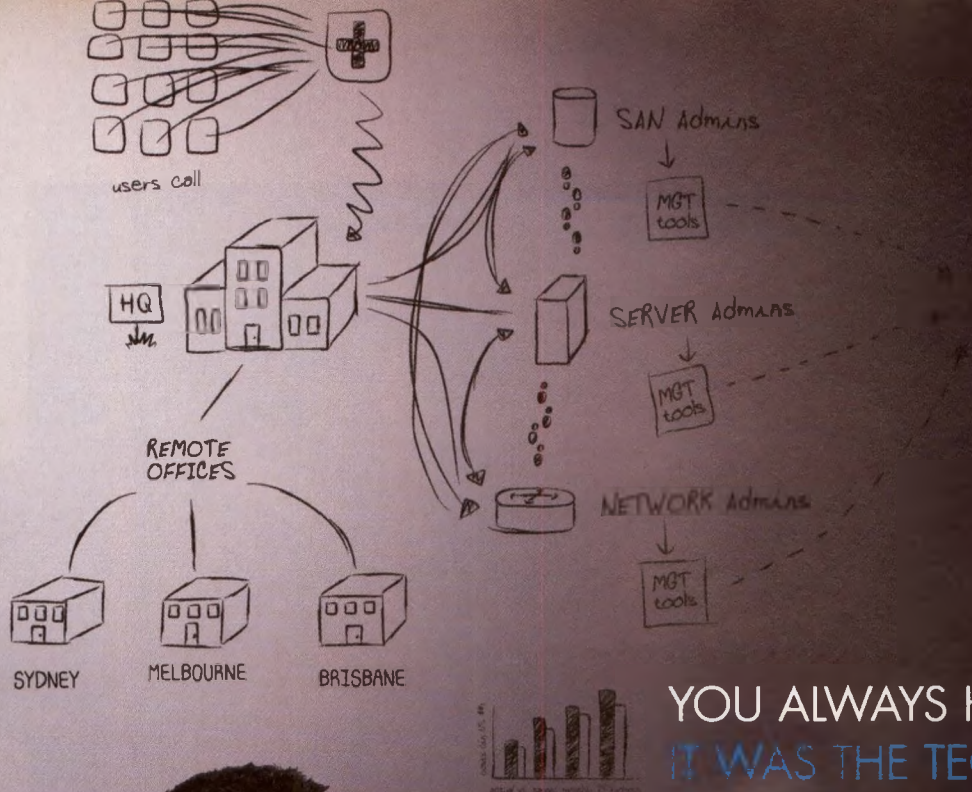
The Steam service locks games to unique user accounts, and it's an effective and less frustrating anti-piracy tool: no Steam account, no game.

APOLOGY

On pages 20-22 of the June 2003 issue of APC Magazine an article appeared entitled "Choking on Spam". The article may have been taken to suggest that Mr Alan Le Busque was

replaced as the Manager of the Commonwealth Government "Spam project" as a result of sub-standard work performed by him in preparation of an interim report on countering

spam. APC Magazine acknowledges that any such suggestion was incorrect, and apologises for any hurt or damage caused to Mr Le Busque by reason of publication of the article.



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Intel's US\$200 'Classmate' laptops for developing countries.

Wafer-thin: Intel's mobility chief Mooly Eden holds a wafer of next-gen CPUs.



INTEL ANNOUNCES Core 2 Duo on steroids

Dan Warne visited IDF Beijing to discover Intel's new maxed-out Core 2 Duo chip.

Intel used its triannual industry love-in in Beijing to announce a beefed-up Core 2 Duo design which is capable of overclocking a single core if the PC is mainly running single-threaded processes.

The chip giant has been urging developers for years to rewrite their software in threaded mode, where bigger tasks are split up into many smaller ones and run in parallel across multiple CPU cores. However, due to the complexity of rethinking software logic in this way, the developer community has been slower than expected to come to the party.

The new Core 2 Duo, which will be released as part of the 'Santa Rosa' platform that goes on sale this month (along with Intel's Vista Aero-compatible 965 Express integrated graphics, draft 802.11n and optional 'Turbo Memory' flash cache), will be able to ramp up the clock speed of one of its two cores if software isn't multi-threaded.

Intel mobility chief Mooly Eden said this wasn't overclocking, since that describes taking a chip out of specification and potentially burning it out. The single-core

clock speed increase is within the specification planned for the new Core 2 Duos. That said, it's only an increase of up to 10%, so it's not necessarily something you'll notice.

However, the new Core 2 Duo will have an 800MHz frontside bus, further boosting the PC's ability to shunt data quickly from memory to CPU.

Intel says it will refresh the chip based on 45nm technology in early 2008 (see image on the right): a move which is unlikely to mean much to end users — but may potentially allow the chipmaker to increase speed while keeping heat output the same, or even reducing it.

The 45nm process uses Intel's new Hi-k gate technology, which has been hailed as being the biggest advancement in silicon chip technology since the 1960s. It dramatically reduces leakage of electricity from the chip's circuits, which in turn allows substantially faster performance with less heat.

INTEL'S US\$200 LAPTOP

Nicholas Negroponte's US\$100 laptop isn't the only machine in the running for the developing

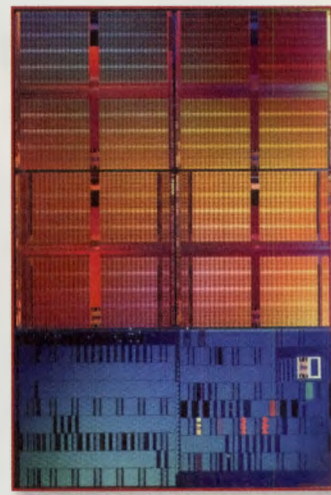
world's dollar. Intel unveiled a 'Classmate' PC which is ruggedised, has 1GB or 2GB of flash storage, depending on the configuration, and can run Windows or Linux. The keyboard is waterproof, and it has a soft vinyl case attached with a carry handle so students can easily walk with it. Inside, it has a Celeron M processor, 7in 800 x 480 LCD and 256MB of DDR2 RAM. It doesn't have an optical drive, and Intel has built in anti-theft protection so that if the laptop isn't returned to a central point like a school every few days (the timespan can be administratively controlled), it will hardware-lock, providing a disincentive to thieves.

Intel refused to answer questions on whether it was making money on the device or whether it would ever consider selling it in developed western countries, instead preferring to say that it considered the problem of introducing computing into developing countries as one that must involve technology, teachers, curriculums and training.

If the extra US\$100 cost over the Negroponte laptop is bothering

governments, it's not obvious. Intel has already sold the laptops to Mexico, Brazil, Nigeria and India.

Currently, the laptops run embedded XP, which was another area where Intel wasn't prepared to comment on cost, except to say that many software companies run special grant programs for developing countries. (We can't



Coming in 2008: Intel's 45nm CPU codenamed 'Penryn'.

IDF REVELATIONS:

INTEL CONFIRMS IT'S DUMPED 3G

Mooly Eden confirmed that Intel wasn't going to produce a 3G HSDPA module for its Santa Rosa platform after all, preferring to spend all its resources on perfecting WiMAX. It had originally planned to develop the module in collaboration with Nokia, but said it ultimately decided that with less than 10% of laptops sold expecting to include it, it wasn't worth the cost of development. We think it's more likely to be because it created confusion over Intel's commitment to WiMAX.

80-CORE CPU DEMONSTRATED

Intel also revealed an 80-core research CPU chomping through data at a staggering two teraflops a second. It doesn't yet use standard Intel Architecture

(IA) internally, but it's tangible evidence that Intel is making real progress towards massively-multicore CPUs. The CPU uses a new design that has RAM stacked directly on top of the CPU, using copper 'bumps' that touch each other. This provides massively faster RAM throughput than is possible via a traditional system bus. The cores are 'tiled' on the CPU, so that there can be one memory laneway per CPU. Intel said the tiling approach would also allow it to put special function processors onto a CPU, such as a dedicated network interface or a special protocol processor (like an XML processor).

INTEL WIMAX DEMO FAILS

Intel spent five minutes talking about the superior bandwidth of WiMAX and set up a high-definition video conference to the new Beijing stadium to prove it. "That's an interesting outfit you're

wearing there," the on-stage presenter said to the ridiculously suited guy pictured on-screen. "H...m...k...gibbit...blip," said the person at the other end, with his face frozen in a contorted position. "That's what happens when you get ultimately embarrassed," said the red-faced presenter, who moved on to something else very quickly. Intel promises the technology will be working — and shipping in notebooks — by end June 2008.

EIGHT-CORE CPUS DUE IN 2008

Intel has announced CPUs, codenamed Nehalem, that will have up to eight cores and will be on sale in 2008. It is also going to start building special processor cores into the chips for specific tasks such as integrated memory controllers and graphics.

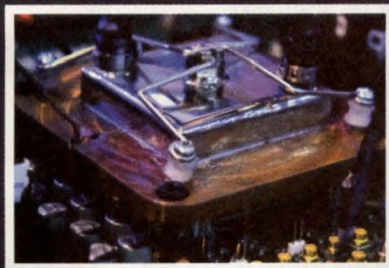
SKULLTRAIL TO KILL AMD 4X4

Intel's play at a top-end gaming

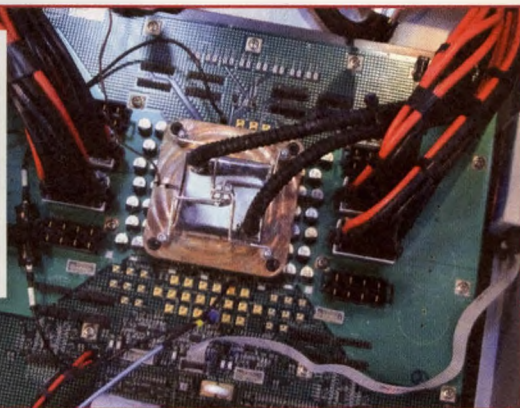
system is the new platform codenamed 'Skulltrail', which can take two quad-core processors and features four PCI Express slots for maximum SLI graphics performance. Expect it to be offensively expensive.

PLUG ME IN, BABY

Intel's 2008 PC platform will include optional HomePlug powerline networking technology, so home PCs can be networked over existing home electrical wiring. The technology (as tested by APC) works reasonably well — better, at least, than 802.11g in most cases — but its stumbling point has been cost, with a pair of adaptors running into hundreds of dollars. Intel says it is working with additional component makers to introduce competition into the product category to bring the cost down for integration into PCs.



80 cores:
Intel's research CPU runs fast!



help seeing some similarity with the dealers who offer the first hit for free to get you hooked.)

BIOS IS NEARLY DEAD

The last vestige of the 1980s PC is soon to be a thing of the past: Intel demonstrated a PC that booted Windows using a UEFI firmware startup sequence.

UEFI is a specification for a

bootloader and interface between a computer's hardware and OS. Until recently, Apple was the only prominent PC vendor to use it in its native form without a BIOS compatibility layer (but later capitulated, adding the BIOS compatibility support layer as part of Boot Camp, allowing XP and Vista to be installed on Macs).

BIOS giants AMI and Phoenix

have now announced that they are releasing UEFI firmware for system makers, and Panasonic, Sony and Samsung are already on board with the Phoenix platform. Lenovo has also been shipping PCs for some time with UEFI and a BIOS compatibility layer installed.

The UEFI PC demonstrated by Intel was built by Chinese computer company Great Wall

Computer and included an impressive GUI for the startup sequence. Lu Zenhyu, vice president of Great Wall Computer, showed a PC in pre-boot which featured a graphical user interface that provided user selection based on the user's photo and fingerprint scan.

Dan Warne travelled to IDF Beijing as a guest of Intel.

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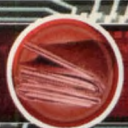
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COMPUTING THE UNIVERSE

John Brandon asks the director of scientific computing at Stanford University, Richard Mount, how he tackles the world's most data-intensive scientific experiment.

Since 1997, Richard Mount has been the director of scientific computing at the Stanford Linear Accelerator Center (SLAC), one of the world's most prominent centres for data-intensive computations. Mount received his BA from Oxford University in 1970, and his PhD in high-energy physics at Cambridge University in 1975.

At SLAC, he has been highly involved in BaBar, a pre-eminent experiment in particle physics. Mount talks about how SLAC runs the world's largest database, and their reliance on 4,000 processors for research and analysis.

What if you could understand the origins of the universe? Well, in many respects, you would help solve some of the most prominent questions of science: how did we get here? Is there order in the universe? Do the scientific principles

of today correlate to the earliest laws of nature in the universe, or have these laws changed over time? At SLAC — a joint venture with the US Department of Energy — physicists are attempting to answer some of these questions. Yet, there's a huge problem in trying to answer the questions: a particle accelerator analysing sub-atomic particles colliding into one another produces large amounts of numerical data, and understanding what it all means requires a huge amount of computer power.

APC: What is all the data?

Richard Mount: We are working on what's known as the BaBar experiment. The word was chosen because the experiment produces B and Anti-B mesons, which is beauty and anti-beauty, or bottom and anti-bottom. If you say that as a physicist then "BB-BA" sounds like BaBar.

APC: We've heard that you have 4,000 processors used for analysis?

RM: Yes. Now, it's not necessarily an enormous number, but because we're measuring the same quantum probability distribution, each measurement as a sample of that distribution is independent of the other. So, we can take this data and we can process it in parallel, or backwards or forwards, or split it into chunks. You don't have to do this on a computer where every part talks to every other part. It's a data-flow problem; it's not really a massively coupled computation problem. So, it's easy to decompose using really cheap processors.

Almost two decades ago we stopped buying the biggest computer money could buy, we moved to much smaller things such as an IBM RS6000 or Sun SPARCstation. We almost universally

use Linux boxes with Intel or AMD processors, and we often buy these by the thousands (or 1,024) at a time. Almost all are racks, connected to the data infrastructure using Gigabit connections on each box.

They connect through a large network-switching infrastructure, which is, in a sense, the backplane of our computer system here. Thousands of boxes connect to around 100 to 200 data servers, with disks attached to them, and they connect to servers that have tapes attached to them. Six of the tape silos are capable of holding 30,000 tapes, and hold about 200GB per tape. So we have six petabytes of storage there, which we are about to upgrade to the next generation of technology, which will be half a terabyte per tape.

Our data analysis picture is that we have tape storage on the



The SLAC facility houses the world's largest database. Around 600 physicists are involved in its BaBar experiment.

In the early 1990s, particle accelerators researchers started to use object-oriented languages — Richard Mount's BaBar team favours C++ to process data.

The experiment uses an inventory of between 4,000 and 5,000 processors.



bottom, and nothing exists logically in a consistent way unless it is there on the tape. The data is replicated in almost real-time on one or more computer centres in Europe.

APC: What are the applications you're using to crunch the numbers?

RM: For most of my career, I have written FORTRAN code as a physicist. It was quite a surreal experience to write code for high-energy physics experiments in FORTRAN, mainly because you develop meta languages to describe what you're really doing, which is data processing and moving stuff around. In the early 1990s, the whole field jumped on object-oriented languages, which really describes what we're doing a lot better, since very little of it is large mathematical expressions. After trying loads of languages, we landed on C++.

APC: It's great that a classic engineering language from the 1950s is used in one of the world's cutting-edge physics experiments.

RM: FORTRAN was a great plain language to make data consistent in,

but it didn't provide useful features for storing and retrieving data, so we wrote all of those ourselves. It was natural to say "we're moving to a new language, why don't we try to use technology that's well-adapted to provide consistency in an object oriented world?" — in other words, object databases. And it was decided with the BaBar experiment that they would choose Objectivity.



OUR FRIENDS AT INTERNET2 SAY THAT WE ARE BY FAR THE SINGLE LARGEST SCIENTIFIC SOURCE FOR DATA IN THE NEW NETWORK

We thought that, once the technology worked, a lot of people would jump on object databases as a way to handle their data, and that didn't happen. We built up an Objectivity database with 900TB of BaBar data as a true single database, where every piece of data can refer to any other piece of data.

APC: So what are you using now?

RM: BaBar has seven million

lines of code, and these have to be validated. We ended up being quite constrained, and it was clear that if we asked Objectivity to build and validate code for different Linux versions, each one would cost tens of thousands of dollars.

So we moved to a simpler system. In those days — because of the nature of high energy physics analysis — it was desirable to be

But having that many concurrent accesses to a disk doesn't work.

APC: That's not good. So how can you solve this issue?

RM: We've been working now for more than one and a half years on a technological approach to making data access much more flexible, which is a totally obvious one — you have to use random access memory instead of disks.

random. Now, it's not altogether random; we process things one collision at a time, and order things in some way, but the data you want ends up being random. With 4,000 devices under the control of a few hundred physicists, it was a huge number of requests for objects out of the data store.

Fifteen years ago, it seemed like you could run that on disk.

APC: What are some of the other issues with the immense amount of data you have to analyse?

RM: We're usually the US network champions. Our friends at Internet2 say that we are by far the single largest scientific source for data on the network. But actually most of it goes to Europe, mostly because Europe contributes the most computing resources. **APC**



Security is what you make of it

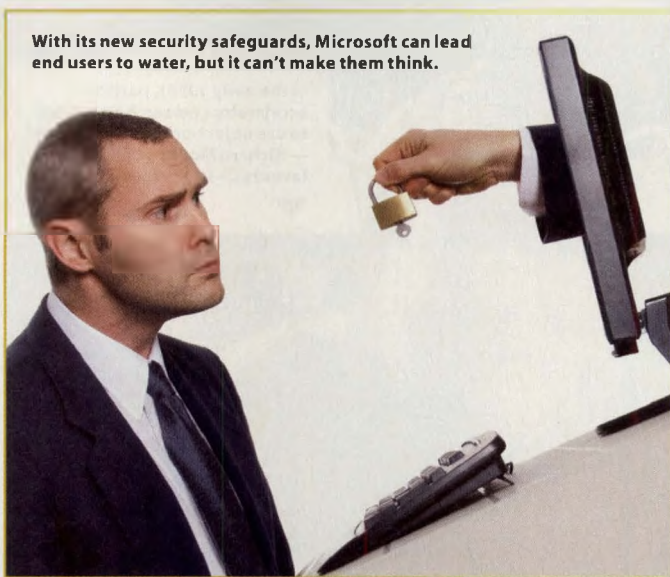
Windows Vista's UAC might require you to do a lot of clicking, but all in the name of user security — and that can't be a bad thing, can it?

Windows Vista incorporates the necessary technology to be the most secure operating system out there — even more secure than comparable desktop Linux distros or Mac OS X. But as with every other previous version of Windows, there is one major weakness — the person at the keyboard.

The swathe of embedded security in Vista points to a paradigm shift in Microsoft's approach to system protection. Features like User Account Control, Protected Mode IE, bi-directional Windows Firewall, multiple local Group Policies, and the principles of Least Privilege and Trust essentially put the onus of system security back onto the user. Microsoft are essentially saying: "We've provided you with the tools — now it's up to you".

Is this a cop-out? Not really — security always has to be balanced by functionality, and that's when potential exploits start to creep in. However, this is true of all aspects of information technology, not just desktop operating systems. After all, who would use a browser that never allowed ActiveX controls to be installed, 'just in case'? The most secure system in the world is a machine, consisting of a hard drive, screen, keyboard and mouse, that sits in isolation

With its new security safeguards, Microsoft can lead end users to water, but it can't make them think.



THERE IS ONE MAJOR WEAKNESS — THE PERSON AT THE KEYBOARD

in a lead-lined room. But who would use it?

So to give users the functionality they desire, they have to have some independence and the necessary rights to achieve what they want to do. And that's where malware strikes. It assumes that a user has admin rights to their machine, and then tricks them into installing or enabling something which appears to be, on the surface, perfectly innocuous. The user doesn't suspect that something is

amiss and unwittingly compromises their system.

And no matter how tempting it is to claim otherwise, that's not the operating system's fault. After all, if you give your network password to someone and they abuse it, that's not grounds to complain about network security.

In many respects, that was (and still is) the problem with Windows 2000- and XP-based workstations. A single user with admin rights (which is basically all of them) can

inadvertently bring the system crashing down. Anti-malware and anti-spyware can help the situation, but only after the fact. By comparison, machines with limited user accounts, like public access terminals, have a drastically lower instance of system compromise.

And that's the approach taken in Windows Vista — limit every user account. You can still do what you want to, but Vista forces you to acknowledge the fact that actions taken by you or particular applications are actually changing system settings. Is it annoying? Yes, it certainly is. User Account Control (UAC) prompts have been the source of complaints ever since they first emerged in beta testing, and almost every article on tweaking Vista starts with disabling UAC.

That's fine as it goes, and perhaps an experienced Windows user will know enough to stay out of trouble. But a Vista machine with UAC disabled is, by definition, less secure than one with UAC turned on, and home users especially will do themselves a disservice to choose convenience over protection. It's specifically designed to protect users from social engineering attacks — insidious threats that prey on a lack of knowledge and an automatic assumption of trust.

Yes the pop-ups are annoying, but if you consider each time that Vista isn't really going out of its way to make your life miserable, and is actually doing its best to save you from the Great Unknown, that should compensate for a few extra clicks. **ETIC**



HastalaVista

by
James Bannan

James Bannan is a systems manager at St Leonard's College (Vic) and APC's resident Windows expert. He'll be checking out Vista for you every month.



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Stick to your guns

Does a rose by any other name really smell as sweet? A clash of principles between Mozilla and Debian sees Firefox renamed.

Recently, Debian 4.0 hit the scene and, with it, the new re-branded Firefox and Thunderbird packages — retitled 'Iceweasel' and 'Icedove' respectively.

Aside from the witty play on names, the products also bundle new artwork — and therein lies the source of the spat between Mozilla and the Debian developers.

On the surface, the long-standing debate that led to this change — which to the end user seems silly and unnecessary — has its roots in a fundamental difference between the importance of protecting brand identity, and sticking to a belief system that underpins your world.

In other words, the re-branding was essentially inevitable.

First a refresher: Debian, one of the oldest and most respected Linux distributions, was built from the ground up on a single-core philosophy, a strict adherence to the principles of open source: all software bundled in the distribution must be free — and yes, we're not talking 'free as in beer'. Debian has a 'social contract' (aka. 'Debian Free Software Guidelines') that all software must adhere to in order to be included, and that essentially states the program must not limit the freedom of others, allow redistribution and include source code, and not restrict other

software. GPLd software, for example, is accepted under these guidelines.

Enter Mozilla. Firefox is, of course, distributed in Debian as in most other Linux distributions. And while Firefox itself comes under the open source banner, the logo itself is trademarked.

Which, by definition, is restrictive. According to the Debian Free Software Guidelines, this is 'non-free' and, as a result, the Debian developers won't include it. Now, they're fine with using replacement, unrestricted artwork, but then, says the Mozilla foundation, you can't call the browser 'Firefox'. Previously, Debian was allowed to call it Firefox and could bundle it with a different (free) logo, but Mozilla later revoked this. In an effort to protect its brand, Mozilla sent the developers this message: either use the Firefox branding and logo together, or use none at all.

Every single one of Debian's over 18,000 software packages since the distribution's inception in 1993

The old Firefox logo we all knew and loved...



...has morphed into the new-look 'Iceweasel'.



abides by the Debian Free Software Guidelines.

To break that, even for a package like Firefox, would render the philosophy moot, so that clearly wasn't going to happen.

And at the same time, it seems hard to fault Mozilla — Firefox and Thunderbird are now well-known, and the company has done an amazing job changing the landscape of the web — and all through open source (with code freely available) products. It seems fair that the brand they have created is protected and not diluted (however unintentionally).

But just where do you draw the line — if ever, in fact — between philosophy and practicality? It seems silly to rename and rebrand a product, when it's the same product anyway, just because the artwork is trademarked. However, if not for the trademark, anyone could abuse the use of the Firefox brand, which, as a measure of success, is associated

with one of the world's most popular browsers. Purely as a matter of integrity, the brand does need to be protected, or anyone could slap it onto some two-bit product.

Which is all so bitterly ironic — Mozilla and Debian both believe in open source (though not necessarily 'free') software, and both are responsible for changing the world's technology landscape (Debian forms the base of many other distributions, including Ubuntu). And to have this sort of rift between them only weakens the global open source message — not strengthen it, which both camps ultimately bat for.

In summary, it would be foolish for Mozilla to exercise its trademark, and impossible for Debian to break its founding principles. And so now we have Firefox and Iceweasel, identical in all but name. Does it still smell as sweet? **BTG**



LinuxWindow

by
Ashton Mills

Editor of the Linux Pocketbooks series, and more recently Atomic magazine, Ashton has been a tech journo for over 12 years, including five years with APC.



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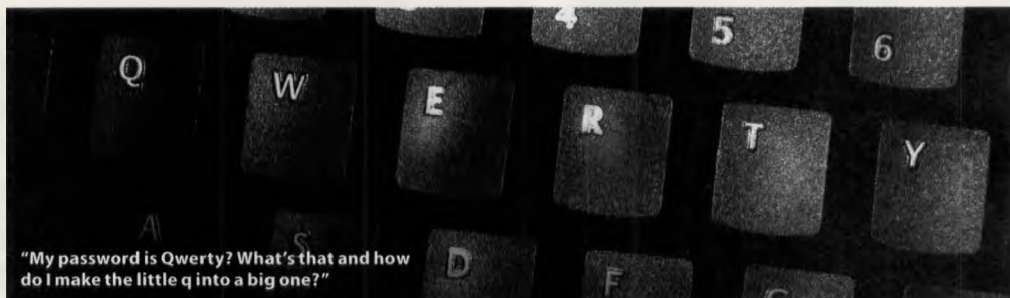
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The more things change

The great thing about End User is that the experiences we hear about don't seem to get any better (read: smarter) each month. There is always a user to outdo the last.

We keep saying we've found the dumbest end user, but each month we unearth an even dumber one. Phil West, a 'PC Doctor' from Wakerley, Queensland, was contacted by an end user whose PC had been frequently rebooting — and then had suddenly stopped working. "A close inspection revealed a rather burnt odour from the power supply," says West. When he investigated further, the owner told him he'd decided to do a bit of spring cleaning of his system. "So he had proceeded to use a small screwdriver to clean out the buildup of dust and household debris that had accumulated in the power supply," says West. The only problem was that the moron did it while the system was still running. "Needless to say, a considerable amount of sparks, smoke and a 'phutting' noise was the result." Once West opened the case, he discovered a massive amount of dust had built up in the front of the case behind the intake fan. "There was so much dust, hair and what have you that it was like one of Elton John's wigs was jammed in the fan blades." West then did a big cleanout, put in a new power supply and fan, and gave the user "a word of warning



THE MORON DID IT WHILE THE SYSTEM WAS STILL RUNNING. NEEDLESS TO SAY, THERE WERE SPARKS, SMOKE AND A 'PHUTTING' NOISE

about the risks of probing into electrical devices."

DEADLY AUTOGRAPHS

Maria Dimura of Matraville, NSW, says her sister had to sign for items delivered at her work. Maria recalls one particular delivery: "I guess she wasn't thinking about what she was actually doing when she signed the delivery man's PDA with a real pen, rather than a stylus pen. She said the delivery man took a closer look at his ruined PDA screen with a surprised look on his face!" Ouch. Which reminds us — we once asked a famous person for an autograph, except we offered them our Palm organiser. Not a good idea. The Palm survived, just.

QWERTY SPELLING TEST

Fred Giono works as a client services engineer for a software

company. One of his sales directors logged a helpdesk ticket to enable his new BlackBerry Pearl. Once the account was set up, Giono gave him a call to walk him through the activation steps. "I told him to enter his email address and that the password was 'qwerty'. There was a moment of silence and then 'Qwerty? How do you spell that?' I was shocked. I asked if he was kidding, but he wasn't. So I proceeded to spell it out to him. Long story short, I had to tell him which key to hit — I asked him to find the letter Q and hit it, then W, E, R etc." Sometimes we think we should rename this column 'Dumb Senior Managers'.

DUMB BLONDE END USER

We're not sure whether this is a dumb end user, or just a brunette version of a dumb blonde. Joe

Mihaljevic, from a car dealership in Sydney, was called in to help a new employee, "a former photographic model that was plucked from the stands at the Motor Show and converted into a cold-blooded vehicle sales person." When she first arrived on deck, Mihaljevic created her profile on the network and walked up to her office to configure her Outlook account. "I gave her the quick run-down on email, network drives etc. She listened intently and nodded with enthusiasm." Just as he turned to head back to his office, he saw her triumphantly open a blank Word document. "I was half way out the door when she stopped me mid-stride: 'Just a quick question before you go... um... how do you turn a little 'm' into a big 'M'?' At that point, Mihaljevic knew he had his work cut out for him.



EndUser

from
The readers of APC

APC readers who deal with new computer users or incompetent IT administrators share their survival stories.



PULLING HIS HAIR OUT IN FRUSTRATION
Something we've all done from time to time.

Our request last month for suggestions on what could replace the gun in HelpDesk Ed's hands provoked a storm of protest — as well many suggestions for alternatives.

One reader, Greg Butler, from Berwick, Victoria, emailed us to say: "It is rare that I feel compelled to make a comment about something I have read in a magazine. But with HelpDesk Ed about to be given the bullet (pardon the pun) because some poor reader without a sense of humour believes that he is adding to the violence within our society, I feel the need to leap to his defence.

"Your reaction to this is, in my humble opinion, in a word, farcical. The question asked by Robin Miller (the reader who has asked for the gun to go) is 'How does the image of computers used in the home and office look when it is associated

with guns used in anger by tech support against end users?'

"The answer is it looks bloody funny as it is intended to. It is clearly a non-serious, non-threatening satirical photo making light of the frustration felt by a tech support person. I believe HelpDesk Ed should stay and Robin should be given a couple of tickets to the Melbourne Comedy festival to better enable her to explore her sense of humour.

"Seriously, you guys deciding to replace HelpDesk Ed because someone complained is simply pandering to another minority. Well, Robin says away with Ed and I say keep him. That makes it one a

piece. I bet that now places you in a quandary. How are you going to cater to two diametrically opposed minority groups? You've got to keep us all happy, you know.

"Really, I think you need to take another look at this. HelpDesk Ed is clearly not intimidating to anyone — his finger isn't even on the trigger for heaven's sake. Look at his eyes: I fully believe if all the people who held guns in this world had comparable optical abilities to what Ed is displaying, there would be a heck of a lot less gun shot victims.

"Where will this end — have you considered that you may have religiously vilified someone by having Ed wearing a shirt with a

depiction of a devil on it!? Keep your sense of humour and leave Ed where he is."

OK, we take on board Greg's point about being too sensitive to a reader's views. But since the events at Virginia Tech, Blacksburg, we feel we need to give Robin's views consideration. So, we're going to hold a vote. We want you to vote for one of the suggestions that we received from readers. Below is a selection. Our art director, Chris Zammit, who created HelpDesk Ed, has created five different versions. Pick your favourite and email apcenduser@acpmagazines.com.au. We'll announce the winner next month. [EDIT](#)



STRANGLING A RUBBER DUCKY
Suggested by Andrew Ciseau.



PUNCHING A COMPUTER
Suggested by Beau Nieuwveld
(many variations on this theme were suggested by readers!).



BANGING HIS HEAD WITH A PHONE
Suggested by Steve Schier.



STARTING TO LOSE HIS COOL
This was a common general suggestion.

WINNERS!

This month's published readers win a Microsoft Wireless Laser Mouse 6000 worth \$129.95. Made for desktop PCs, it features Microsoft's high-definition laser technology with ultimate precision and smoother tracking and responsiveness (even on unique surfaces). This mouse includes a new magnifier tool and a tilt wheel, making navigating, viewing and editing easier. The Microsoft Wireless Laser Mouse 6000 delivers comfort and superior control to the desktop in a high-end style that will turn heads.



SEND US YOUR CONTRIBUTION AND WIN A PRIZE!

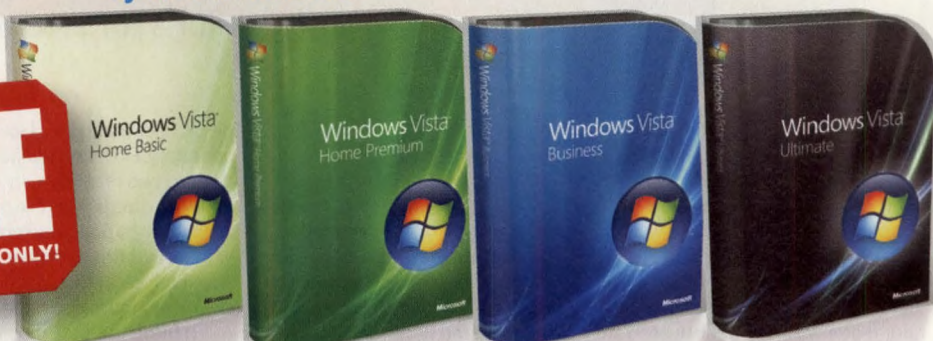
Send in your tales of woe involving dumb end users or incompetent techies to apcenduser@acpmagazines.com.au and if we print it, you'll win a prize. You must supply contact details in order for us to verify your contribution.



Watchdog

eyes on vendors

FOR SALE
FROM MICROSOFT-PREFERRED RETAILERS ONLY!



Stuck in the middle with you

We've heard a lot about the Vista rollout from an end user's perspective, but what about the hurdles a small business faces — as an intermediary between MS and the customer?

I just thought I would share our story of "Vista release day" and see if other stores are in the same position. We are a registered member of the Microsoft Partner Program and have been operating for two years now. We are not a large store and cannot compete with Harvey Norman or any other retail chain; however, we manage to hold our own and have slowly built up a strong reputation in the local community.

Over the past few months, we have been trying to retrieve information regarding the rollout, prices and availability of Vista from Microsoft. We've had to deal with roadblocks at every step of the way, but have slowly put together a decent profile of the software and information. However, it came to our attention last week that the Microsoft Action Pack Update that was meant to be released in January 2007 — and was to include a copy of Vista — has been delayed till "sometime in February".

After ringing the Partner Program several times, receiving different responses on each occasion, we finally verified the release date and also discovered that the pack would only include the Vista Business Edition.

However, in recent times, that information has changed again. Now the release is in April and they

have no idea what version of Vista they are going to send.

The ironic part about this statement is that, according to the OEM System Builder Licence Agreement that Microsoft has told us we have to abide by, we essentially have to support the operating system for the term of our normal hardware warranty.

So, we have to support their product, but will not receive a copy of this product or know what version of the product we will receive in order to achieve this level of support *before* April. Considering launch day is 30 January, I consider this totally appalling.

In short, we have paid to be a part of this Partner Program and will have to pay to support Vista for our clients — and will not be paid by Microsoft to support their product.

Add to this the total unavailability of products from our suppliers — I cannot confirm this, but I suspect it is because of our size (as the local Harvey Norman store *already* has stock). It seems that we will lose income from this launch. However, my biggest fear is that, with the lack of support, we will take a hit to our reputation, which will suffer dramatically, as our reputation is built on our honesty and knowledge in the area.

So, I was wondering if APC was aware of the lack of support given

to its Partners by Microsoft — and if there are any other stores out there in a similar position?

Damien Watson
Ethereal Computing Services
Albany, WA

Watchdog invited Microsoft to respond to the issues raised by Damien's complaint. It replied with the following explanation:

Dear Watchdog,
The Microsoft Action Pack Update was unfortunately delayed as Mr Watson details — however, the date given of April is incorrect, with expected delivery of the Action Pack to be February 8. This has been due to circumstances beyond Microsoft Australia's control and we are unclear about where the incorrect information came from.

In previous communications with our partners, Microsoft has not specified which version of Windows Vista would be included in the Action Pack. At this stage, Microsoft expects to deliver Vista Business Edition in the Action Pack on the basis that this version is targeted to small and medium business customers. However, Microsoft does reserve the right to alter this if business reasons mean other versions should be sent out instead.

It is important to Microsoft that it treats all channel and business

partners fairly and, in the leadup to launch, all partners and retailers were under a sell-date agreement which ensured that no company could sell copies of Windows Vista prior to midnight on 29 January. However, retailers do receive display packaging for their shelves (eg. empty Windows Vista boxes) prior to launch which can easily be mistaken for 'for sale' copies.

Microsoft accepts that Mr Watson's call was handled incorrectly by our call centre and has put in place processes to ensure that this will not occur in the future.

Pip Marlow
Director, Small & Medium Business and Partner
Microsoft Australia

Daniel thanked us for clearing this up and confirmed the response himself with Microsoft. He told us: "I am still a little bemused by the way we have been treated, considering we are only trying to do the right thing. I can assure you that we will never be subscribing to the Action Pack again; it just seems pointless if we don't even get a copy of any version of Vista until at least two weeks after launch. We currently have Vista RC1 and Vista Home Basic on our store demo machines, while Ubuntu Multimedia Center takes pride of place in our large home display area (until we can obtain a copy of the Premium 64-bit version)."

SEEING AMBER

When Franco Busetti of Johannesburg, South Africa, ordered his copy of Margi Presenter-to-Go from Australian company Amber Technology, little did he know the difficulties and delays he was in for. "Contrary to explicit instructions, it was not shipped by courier and the parcel was also incompletely addressed, so it never arrived. They acknowledged culpability by email, apologised profusely and undertook to re-deliver, but after repeated emails and telephone calls (which brought further promises), there has been no replacement or refund. It has become quite clear that this

company has no intention of keeping its promise to replace this product. I feel your readers should be warned about dealing with this company."

Watchdog invited Amber to respond to Franco's complaint. Rod Sommerich, product manager for Amber's display products, told us: "The difficulty was that the product the client wished to purchase is no longer available from the manufacturer and we have been offering the stock as a clearance special." Amber concedes that it shipped the item via Post instead of FedEx (as requested), but insists the item was addressed as per the client's

instructions. However, calling the postal system in South Africa "unreliable", Amber maintains the unit was stolen or lost in transit. Accepting the loss as unfortunate (but outside of its control), Amber refunded the shipping cost charged to the client and investigated resupplying — only to discover the item was out of stock: "We made every effort to locate another unit, but we were unable to find any new or ex-demo stock of the product with any resellers or in any of our offices. We contacted the client and arranged a full refund to his credit card and apologised for the issue via phone,

but due to staff issues we had not finalised the credit to his Visa card. Our accounts department has apologised to the client today and will finalise a full refund of all purchase and freight charges for the item the client purchased but did not receive. We have addressed our procedures from the delay encountered by this client for the refund and we hope these will not reoccur." Franco denied to APC ever having been offered a refund prior to Watchdog's investigation, but confirmed it eventually turned up after we looked into things: "Yes, I finally received it. Like pulling hen's teeth."



IT'S BECOME QUITE CLEAR THAT THIS COMPANY HAS NO INTENTION OF KEEPING ITS PROMISE TO REPLACE THIS PRODUCT

PUTTING THE 'PAID' IN 'PREPAID'

Late last year, I bought a prepaid internet card from a newsagent (the provider was iiNet). It was a prepaid connection for one month. Today I got a call from iiNet saying that I owed them \$19 for dialup internet services. I never agreed to continue the subscription (I stopped using the prepaid account in early January). But for some reason, today I got a call from someone asking if I knew the password to cancel the account... what account? And once they put me on hold to speak to their supervisor (to close the account), they notified me that I would be billed for services I never used or agreed to use. I'm just glad they got in touch with me — I don't know how much longer they would have billed me for a service that I never agreed on using. I thought that's what 'prepaid' internet meant?

When I realised what iiNet were doing I said to them, "So basically, iiNet is going to invoice me for a service I never used or agreed to use?" They just went quiet, but out

of frustration (and wanting to get back to work), I just said, "Whatever, just invoice me — I don't care."

I don't know if this is a story that you guys can run with or not. I thought it was pretty funny. I'm a long-time subscriber to APC (a service that I actually agree to use) and I always read the stories and laugh. Now I have one of my own.

Scott Barber
Brisbane, Qld

We asked iiNet to explain why Scott was still being charged for a 'prepaid' account. The company's response follows:

Dear Watchdog,

Thank you for bringing this to our attention. The prepaid product in question is not something that iiNet has ever offered. These 'BigBlue' prepaid plans were offered by a company that iiNet acquired a few years ago. Production of BigBlue prepaid packs ceased in 2004 — however, it appears that some retailers must still have old stock on their shelves.

iiNet continues to honour any of these old prepaid products sold. However, to activate the credit, a purchaser is required to contact our telephone help desk for further instruction.

The contact that Scott had with us, when he activated the account, would have included an explanation of the options available to him to use up the credit, including the creation of an ongoing account. It appears in this instance there has been a miscommunication, which resulted in Scott being charged an ongoing amount.

We're sorry that Scott has been inconvenienced by this process. His overdue account has now been cleared and the instructions to staff for dealing with prepaid credits have been revised to ensure that such a situation does not occur in the future. Given the length of time since these packs were last produced, we don't expect it will be an ongoing issue.

Mark White
Chief Operating Officer
iiNet

Yes, sir, we understand: you never agreed to sign up to this product, your account doesn't exist... but can I just confirm your billing details?



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Has an IT vendor or telco stuffed you around? Let us know about it and we'll chase them for a solution on your behalf. Letters sent to watchdog@acpmagazines.com.au must include the writer's full name, street address, suburb, state and phone number to be considered for print publication (please also include details such as invoice numbers and people you've spoken to). Address and phone details will not be published. All correspondence becomes the property of APC and is subject to editing.



Epinions

have your say!

ONLINE MOVIES: WHAT GIVES?

It seems as though the very movie producers that are screaming about pirates (and pursuing expensive and restrictive DRM schemes) are shooting themselves in the foot at the same time and handing all their online business to those same pirates.

Sellers of music have seen the light: online music stores are now big business. They have realised that selling huge numbers of products online, at a low price but with very little overhead per unit, is a business model that works. But if you want to buy and download a movie, where do you go?

I have spent some time looking, and cannot find anywhere to legally purchase movies for download. There are any number of illegal sites, of course: in fact it's hard to avoid them. But if you happen to be one of those stricken with a conscience, there just doesn't seem to be any option. You're left with the choice of paying way too much to buy a DVD at the store, or giving in to the temptations of the pirates. There may be legal ones out there that would allow me to purchase, download and burn a legally licensed DVD — but I sure can't find them.

Surely I'm not the only one who

wants to "do the right thing"? Surely an online movie store would be assured of a huge customer base and could sell movies much more cheaply than department stores. Where are they?

Lewis Pritchard
Pendle Hill, NSW

WHEN IS A WARRANTY NOT A WARRANTY?

When the dealer that you bought it from has gone out of business. I bought a Gigabyte GA-K8NS motherboard in May 2005. In November 2006 my computer died. As the dealer from which I purchased the motherboard had gone out of business, I took the computer to a local repair firm for diagnosis. They informed me that the motherboard was dead. I found out from the internet that the motherboard had a three-year warranty. After several phone calls, I found the Gigabyte importer. I wrote to the manager of the firm that imported the motherboard and, after a couple of emails, I was informed that, because I was an end user, I would have to pay \$33 for an RA number and pay for the cost of transport to and from the importer's workshop. This means that it will cost me at least half the cost of a new GA-K8NS motherboard to have this one repaired. I have seen other



Locked away: Lewis from NSW wants to know where all of the legitimate movie download services are. Can you help?

brands of motherboards that would run in my computer advertised as low as \$51. Many of the smaller computer outlets only last about two years. This may, in part, be caused by warranty problems with components — many smaller dealers buy components from third party outlets (eg. online stores). Many people simply upgrade their computer when a major component fails. I am an aged pensioner and cannot afford such costs —

especially when I buy an item that is supposed to be under warranty.

John Morice
Albion Park Rail, NSW

SO-CALLED 'OPERATING' SYSTEM

I have followed the Vista coverage in APC on a monthly basis, as I am a salesman for a reputable computer company in South Australia. I want to explain to my customers how to deal with new technology and keep

letter of the month

ALTERNATIVE EDUCATION

A recent visit to a large retailer had me examining the price of the various flavours of Vista and Microsoft Office (out of sheer curiosity). Whilst I was passing, I was aware of a couple agonising over which version of Microsoft Office they could afford. Their daughter needed it for school; they were reaching for the Academic version. It was clear from the discussion that even the cheaper version was going to be a stretch for them. I couldn't help myself: I had to tell them about OpenOffice as a viable and affordable office suite that would do most things they were asking about — with the exception of Publisher.

I mentioned Scribus as an alternative to consider for publishing. They were extremely grateful to have the existence of such a suite pointed out to them. It meant they could possibly use the money saved to get their daughter a desk (instead of working at the kitchen table). In my mind, this was a far better educational outcome. I admitted to them that I was a teacher and that, I believe, any school not pointing out to their community the existence of OpenOffice — as an alternative for parents struggling on lower incomes — was negligent to say the least. If schools are serious about helping those within their community cope with

the ever-increasing cost of education, OpenOffice and some other open source packages should be at least pointed out to parents and (maybe) even used in the classroom.

Cameron Bell
Ringwood, Vic

Cameron wins this issue's Letter of the Month prize, a Logitech Cordless Desktop MX3200 Laser keyboard and mouse set valued at \$199.95.





Education IT: Stephen from SA thinks other readers have got it wrong on the lockdown of school networks.

them well-informed. I also do not want to make a noose for my neck when selling products and end up performing time-consuming tech support work when I am supposed to be selling IT to make money for myself and my company.

So finally, Vista is released. Day one of release: we sell five packs, ranging from upgrades to full versions (Home and Business mixed). Day two: five angry customers, demanding support or their money back, walk in the door before 10am. The store manager then spends five hours with these customers in the store, trying (unsuccessfully, I might add) to install Vista on display computers with more than enough specs to run this white elephant (and without success).

Thanks, Microsoft — another crap release. I am now going to lose money and time in trying to help hapless users install and run what a man with over 20 years in the business cannot get to work.

Daniel Duggan
Kewick, SA

IN DEFENCE OF SCHOOL IT

The education departments in NSW and Qld are committed to providing free internet access to as many school children as possible. They should be commended for trying to do so — not subjected to the ill-considered, inaccurate and misinformed criticism that you have published in recent *Epinions* columns. The education

departments are providing this service to school children, not adults, so they have a responsibility, both morally and legally, to protect the children from the dangers that are prevalent on the net. Not just pornography, but also hate sites, racist sites, online paedophiles and other dangers. These are real, not imaginary. 15-year-old Carly Ryan met her killer on the net. Where would the education departments stand if Carly had met her killer through the services they provide?

The responsibility they have to protect school children means they must lock down the access they provide as tightly as possible, both for the protection of school children and to prevent circumvention of their security measures. That means that many sites will be banned and that third-party email (over which they have no control) will be banned too. This is not censorship; this is protection of children. When the children become adults and can afford their own internet accounts, then they will find that in Australia there is very little censorship, unlike the unfair comparison that was drawn with China.

Finally, when these children complete their education and enter the workforce, they will find that most companies have internet usage policies that are even more restrictive than the free services provided by the education departments and that those usage policies are enforced by threat of

dismissal. Those threats are not idle: just ask employees who have been sacked for breaking them.

Stephen Cole-Stokes
Parafield Gardens, SA

THE TELCO WHO CRIED WOLF

I received my phone bill the other day. I am now calm enough to talk rationally about the junkmail in the envelope: a brochure, seeming to be sponsored by Telstra, encouraging us to talk to our politicians and regulators about the lack of high-speed broadband in Australia — it really annoyed me. If I remember correctly, Telstra are the people who ditched plans to build FTTN in Australia because the ACCC would not let them build it unless they allowed competitors to use it (for a reasonable fee).

Now that there are rival firms working together to get high-speed broadband to consumers, it seems that Telstra want public opinion to back its childish antics.

As far as I am concerned, "BACK Telstra" can go back to Telstra via the back passage. We now have the choice to use whatever communications carrier we like, and it seems that Telstra is still whining about how they have been done over by the big bad regulator that is only doing its job — ensuring that monopolies do not exist anymore and that competition is as fair and equitable as possible.

Mark McArthur
Mount Gambier, SA

epinions@acpmagazines.com.au

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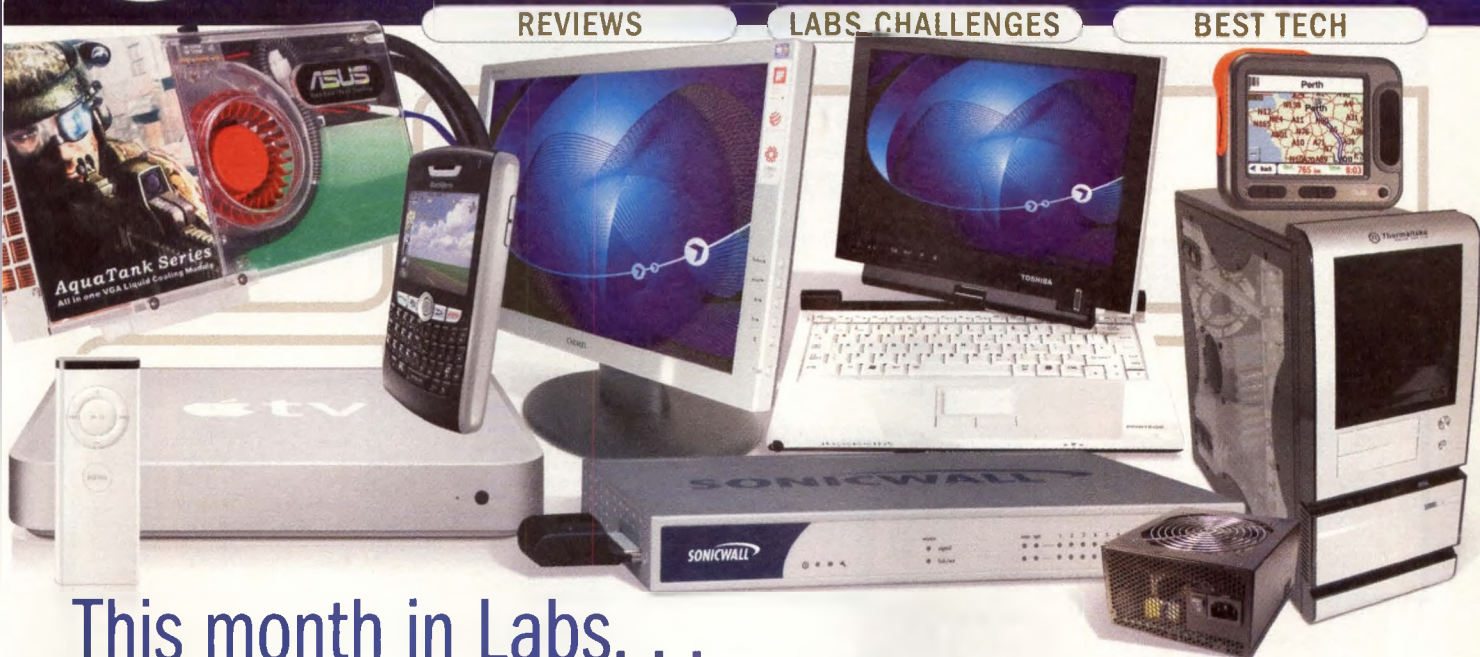
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This month in Labs... Waiting for the Wow

It's been a while since the Redmond giant unleashed its latest incarnation of the Windows OS on an unsuspecting (and perhaps undeserving) public. Now it's time to step back and take account of what it's done, where it's doing well and what can be done better.

There's Windows columns elsewhere in APC, and it's not one of my specialties to pull apart Windows OSs. But, as a power user, knee-deep in Vista for both business and personal use, I'm still wondering when the 'Wow' is going to start. Sure, the OS is out — the pretty pictures and as yet unused DirectX 10 are sitting idle. Windows Vista Ultimate earns you the right to play Texas Hold 'Em poker and a demo of Dreamscene (an animated

background). The Media Centre tool in Home Premium still doesn't have an Aussie EPG; software and games still need coaxing to run right, OpenGL performance is down the tubes and I do not find myself working faster, more efficiently or enjoying media or experiences any more than under Windows XP (with less UAC 'Allow'ing along the way). It looks better, with the previews of minimised applications on the task bar and during Alt-Tab functions that give a little boost. A new version of IE isn't a bad thing (for those few occasions when web sites demand IE — hello Firefox!), Media Player 11 is evolutionary rather than revolutionary — but, on the surface Vista still feels like an add-on pack. All the work's gone on under the

hood, but there's nothing really that can take advantage of it to a great extent... so why go there? Business versions are still up in the air, while no self respecting company will change to Vista until the server version (still codenamed Longhorn) hits the shelves *then* proves itself. OEMs offer it, but I only see it on notebooks, which in most organisations are a wildcard anyway. Going from Windows 98 (or God forbid, Windows Me) to Windows XP did offer a solid upgrade experience. It was noticeably more stable, offered security that Windows 98 was sorely lacking (and made it obvious) and added functionality out of the box — you knew you were using a different piece of

software. Vista just comes across as XP in 3D and is very, very expensive.

I'm not saying don't buy it. You'll need it sooner or later for some piece of yet-to-exist software, but months after installing Vista for the first time, I could still be using XP and wouldn't be hampered in any way.

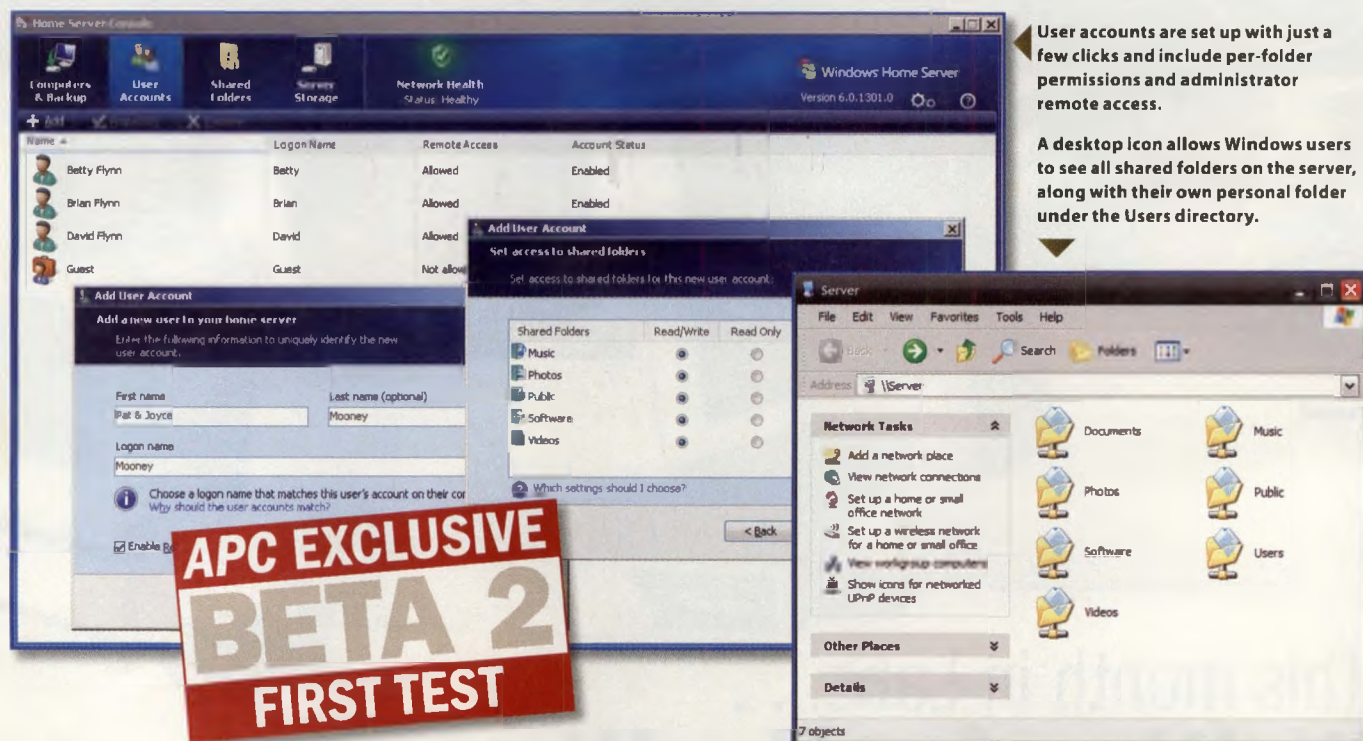
Microsoft, I'd like the 'Wow' to start now, please. [BPC](#)



NO SELF-RESPECTING COMPANY WILL
CHANGE TO VISTA UNTIL THE SERVER
VERSION HITS THE SHELVES

NICK RACE — TECHNICAL EDITOR





User accounts are set up with just a few clicks and include per-folder permissions and administrator remote access.

A desktop icon allows Windows users to see all shared folders on the server, along with their own personal folder under the Users directory.

Windows Home Server

Microsoft's 'server for the rest of us' is off to a promising start, says *David Flynn*, in this exclusive Australian preview of Windows Home Server Beta 2.

Has ever a Microsoft project flown more under the radar than Windows Home Server (WHS)? For the better part of two years it was just another cryptic codename from the Windows Server team, and the cipher itself — 'Quattro' — gave no hints as to the product's nature.

Only at this year's CES did WHS break cover from the Redmond skunkworks. Since then, it's become one of Microsoft's most talked-about products. APC brought you Australia's first report on it in our April 2007 issue, and last month we put one of the first copies of the Beta 2 release through its paces.

SELF SERVICE

Microsoft's intent is that few customers will actually need to install WHS. The target audience of families and everyday PC users will buy bespoke home servers pre-loaded with the OS. HP is already onboard, with Acer and Dell rumoured to be next to sign up.

Following the groundswell of interest from the PC community in

WHS, Microsoft has indicated it's likely to offer the OS as a standalone purchase so that tech-savvy users can build their own box, or turn an ageing desktop or even an out-of-date 'doorstop' system into a server.

The later path is quite feasible, given Windows Home Server's allegedly modest hardware requirements: a 1GHz Pentium III as the minimum processor (although a Pentium 4, AMD x64 or newer CPU is recommended) with 512MB of RAM. Of course, storage is critical for a server, but it's both easy and affordable to boost any system from the minimum spec of an 80GB primary disk to as many hard drives as your system can handle.

We decided to put Microsoft's spec to the test by installing Windows Home Server Beta 2 onto a dusty old Dell mini-tower with a 1.2GHz Pentium III with 512MB of RAM and dropped in a Seagate 160GB hard drive. This meagre system proved surprisingly responsive and stable — after all, home servers don't carry much of a

load sharing files and printers.

There's no doubt that factory-fresh home servers will use more recent CPUs as well as faster memory and SATA drives, all of which will add significant pep to their step and also provide overhead if dedicated Home Server applications start to take off. But it's certainly good news for tinkers with an old system to spare.

SETTING UP YOUR SERVER

The hour-long setup process ran smoothly, if with a few too many reboots, and split the hard disk into a 10GB primary partition named SYS (where the OS resides) with the remainder as the DATA drive. While the setup ends with the classic Windows 2003 admin desktop on screen, this isn't how you're expected to control Windows Home Server. In fact, the OEM servers won't even have ports for a monitor, keyboard or mouse — they'll just be compact 'headless' boxes. The server is remotely managed through the Home Server Console, which

runs on any Windows XP or Vista client PC — but is password protected for admin-only access.

While WHS is built on the foundation of Windows Server 2003 R2, the console's interface borrows from Vista in its colour scheme and general layout, such as large icons along the top and task-sensitive buttons directly below.

ACCESS ALL/SOME AREAS

The admin's first task in the Home Server Console is to set up each user on the network, ideally with the same name and password as on the user's PC. The server supports up to 10 user accounts, plus a guest account. User access to the five default shared folders (and others created by the admin) is changed with a click from the default of read/write to read-only or no access, while the guest account (which is disabled by default) defaults to read-only access to shared folders. The admin also has automatic Remote Access privileges to each user's machine.



The Media Library Sharing feature lets other PCs and Windows Media Connect devices (including the Xbox 360) access music, videos and photos on the server's shared folders.

Windows Home Server is managed through a remote admin console, with a distinctly 'Vista' look and feel.

Users, on the other hand, see only a desktop shortcut to the server's shared folders and a system tray icon, both of which are created when they run the Windows Home Server Connector utility on their Windows XP and Vista machines.

The tray icon indicates server status, while its pop-up menu can open the shared folders, launch the admin console or manually run a backup to the server. (Mac and Linux systems enjoy no such niceties and must manually access the server, which presents itself as an SMB/CIF shared volume.)

However, to save users the trauma of clicking on an icon, the administrator can schedule an automated backup of each Windows XP or Vista client straight to the server. These backups employ the same 'single instance storage' technique as Windows Server 2003 and Vista's Windows Imaging format. Only one copy of any data cluster (at 4Kbit per cluster) is stored,

no matter how many times it appears on how many PCs — any backup image containing that data is simply given a pointer to its actual location.

This means that the same data residing on more than one PC — from Windows system files, applications and supporting DLLs to movies and MP3 tracks — is stored just once. This drastically reduces the size of each image — and consequently the server's overall storage requirements. Subsequent backups are incremental, modifying only those clusters that have changed due to a file being added, edited or deleted. Client PCs on our network were able to access the server's shared folders via both Ethernet and Wi-Fi (using a wireless router connected to the server) and also run backups over Ethernet. Each attempt at a wireless backup stalled before completion, although this is a known bug with Beta 2.

MAKE ROOM, MAKE ROOM!

If you do need extra space, WHS introduces a new Drive Extender technology, which lets you add a hard drive and have its space added to the total pool of user storage instead of appearing to users as a new drive letter. It's not RAID, however, and doesn't require the use of identical drives.

We tested this by plugging into the server a 60GB notebook drive mounted in a FireWire enclosure. Clicking a button on the Server Storage tab in the Home Server Console ran a wizard that erased the drive (after an appropriate warning) and immediately buoyed our storage space by 60GB.

Although data is automatically distributed across all available drives, adding a second drive lets you activate 'folder duplication' for any shared or user directories. This replicates the data onto the second drive as a precaution against the first disk failing. Using Windows Explorer,

we could see the duplicated folders written onto the external drive inside a hidden directory.

To remove the external drive we ran a wizard that copied distributed files back to the primary drive and warned that folder duplication would be de-activated (then wiped all data from the drive).

HITTING THE HOME STRETCH

Like all beta releases, this one has its share of minor flaws and missing features. Being able to remotely access your server (and your home network) over the internet through Microsoft's HomeServer.com domain is yet to appear.

Windows Home Server also lacks some of the 'fit and finish' that will come when it hits the Release Candidate stage — prior to its debut towards the end of this year.

But from what we've seen so far, Windows Home Server looks like one of Microsoft's most impressive 1.0 releases to date. **ITIC**

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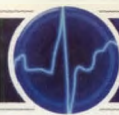
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Intel Xeon Clovertown X5355

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MARKET SMB
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✓ Creates cool and efficient servers.

VERDICT ★★★★★

✗ Needs heavy load to be practical.



The Core microarchitecture has been the be-all and end-all of Intel over the past year. Desktops, notebooks and servers all went dual-core almost overnight, and quad-core on the desktop is creeping into the price range where people would consider buying it.

In the server space, Intel fired up late last year with Woodcrest, the

processor in that it consists of two dual-core processors on a single die. The two processors are identical, featuring 4MB of L2 cache (for a total of 8MB) and running with either a 1,066MHz or 1,333MHz frontside bus. The speeds range from the low-voltage L5310 chip running at 1.6GHz to the X5365 at 3.0GHz.

Processors in the 5300 series are

based 'Dempsey' generation of chips.

Interestingly, Apple has jumped on board the Clovertown train, including the top-of-the-range 3.0GHz X5365 chip. At the time of writing, Apple was offering the processor as an option in the Mac Pro on its web site; however, the chip was not listed on Intel's web site

the configuration of the array, the system is a very typical two-way server, as found in many small businesses.

ON THE BENCH

We ran the test system through a number of different benchmarks, primarily to show the increase in performance obtained when using multiple cores. As a direct comparison, we ran Geekbench — a 'cross platform' Mac/PC benchmark we used to obtain results for the first iteration of the Mac Pro, which used the Woodcrest Xeons. The Mac Pro, which included two X5150 dual-core processors at the same clock speed earned 5,547 under Geekbench 2.0. Our X5355 Clovertown system scored 6,298, showing a non-linear increase in performance with the addition of extra CPU cores.

In a similar vein, we ran the latest version of Maxon's Cinebench, a benchmark that uses image rendering to compare CPU speeds, both between models and using single or multiple cores. Cinebench gave a single core score of 443, while the same render with all eight cores running earned 2,127 — a 4.8x increase in performance.

So, Clovertown's performance isn't under question — it's fast, but is it practical? The thing with multicore systems in general is that you need to be pushing them to realise the benefits. If you're running extremely computationally intensive server or workstation loads, then you'll get your money's worth, with an energy saving to boot. If not, then save your money and buy dual-core.

Nick Race



THE THING WITH MULTICORE SYSTEMS IN GENERAL IS THAT YOU NEED TO BE PUSHING THEM TO REALISE THE BENEFITS

Core-based Xeon for the server and workstation market, which offered a dual-core solution with a TDP (Thermal Design Power) of merely 80 watts. Like Intel's desktop processors, the Core-based Xeon has received a quad-core upgrade in the Clovertown family of chips.

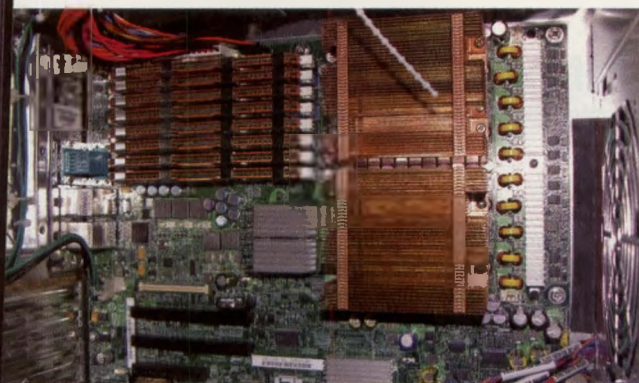
Clovertown, now officially the 5300 series of Xeon processors, is similar to the Kentsfield Core 2 Quad

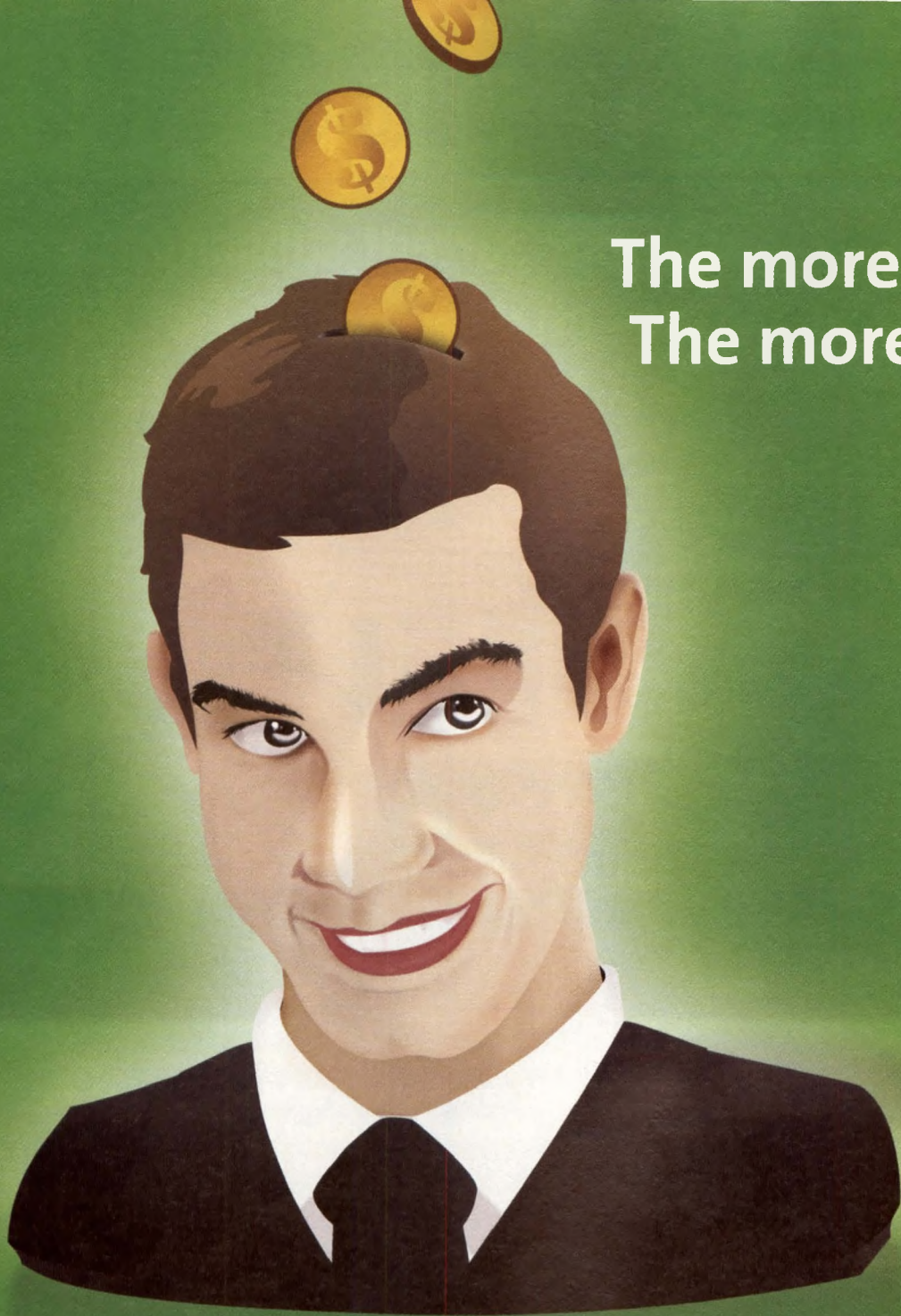
all designed for use in DP (dual-processor) servers or workstations, though they *can* be fitted in single processor boards. All of the 5300 and 5100 chips use the Socket 771 interface exclusively and are built using 65nm technology.

As with Woodcrest, all but one of the Clovertown chips fit in to an 80-watt thermal profile. The 3.0GHz X5365 is the exception to this rule, working with a 120-watt profile, which is still down from the 130 watts output by the 5000 series NetBurst

as an available product. How's that for an exclusive?

We received a 'white box' Intel server built by Octek using two Clovertown Xeon X5355 quad-core processors, for a total of eight logical cores with 1,333MHz FSB, built on an Intel S5000PSL motherboard equipped with 8GB of Legend-branded fully buffered memory (in the form of 8 x 1GB FB-DDR2 modules). The disk subsystem was a four-disk striped array consisting of Seagate 70GB SAS drives on an Intel SRCSAS144E controller. Except for



An illustration of a man with short brown hair, wearing a dark suit, white shirt, and dark tie. He is smiling and looking towards the viewer. Three gold coins with dollar signs are falling from his head, with one coin resting on top of his head. The background is a solid green color.

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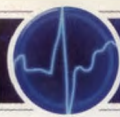
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Fujitsu LifeBook P7230

Light, small and long-lasting — so where have the sacrifices been made?

Notebooks under 1.5kg usually achieve this feat by excluding an optical drive and squeezing in a smaller battery. Not the LifeBook P7230. At 1.33kg, it joins an elite rank of ultra-portables that offer a tiny form factor, desktop-class features and all-day battery-life — a potent combination designed for road warriors that want maximum mobility with minimal sacrifice.

Of course, Fujitsu still had to pull a few tricks to get the notebook's travel weight so low. The P7230 uses a 10.6in wide-screen display that's pin-sharp thanks to a crisp 1,280 x 768 resolution. The smaller footprint also means that the keyboard is less than full-sized; this feels cramped at first, but it doesn't take long to get used to.

The P7230 offers blessed respite from the typical drab black boxes, featuring a creamy white magnesium alloy casing that still manages to look suitably demure for business users. This corporate orientation works hand-in-hand with the pre-installed Vista Business operating system; other features that equip it well for the road include a biometric fingerprint reader, shock-mounted hard drive and a 0.3MP webcam and mic.

An extended run-time is another of the P7230's saving graces. Despite its diminutive size, it packs a 5,800mAh six-cell battery, resulting in a respectable three hours and 24 minutes in our DVD run-down test. This translates to around five hours of real-world usage.

Keeping the P7230 chugging along is a 1.2GHz Core Solo U1400 ULV processor, matched to 1GB of DDR2 RAM, an 80GB hard drive and integrated Intel GMA 950 graphics card. Connectivity is taken care of with 802.11a/b/g WLAN, Bluetooth 2.0 + EDR and Gigabit Ethernet; also on-board is the aforementioned dual-layer DVD super-multi-writer, two USB 2.0 ports, mini-FireWire, PC Card Type II, VGA and a 3-in-1 memory card reader.

For a traveller's machine like this, the specs are more than sufficient, but it struggles when running multiple programs or a demanding application. This is reflected in the modest benchmark scores: 134 3DMarks under 3DMark06 and 1,193 PCMarks

under PCMark05. Another thing we noticed when putting it under strain is the persistently loud fan — something sure to annoy after extended use.

Jenneth Orantia



• **CONTACT** Fujitsu
• **ONLINE** www.fujitsu.com.au
• **MARKET** Everyone
• **PRICE** \$2,999

✓ Built-in optical drive; battery life.

• **VERDICT** ★★★★★

✗ Loud fan; middling performance.

Toshiba Portege R4000

A visually stunning reimaging of the Tablet, at the expense of performance.

The Toshiba Portege R400 is a radical departure from Toshiba's previous Tablet PCs. Far from the blocky and conservative designs we've come to expect, the R400 is a vision in glossy white, with an ultra-sleek profile that

positions it firmly in the thin-and-light category.

New to the R400 is the Toshiba Edge Display: a one-line OLED screen on the tablet's rim that presents time, battery status and wireless signal. If you've got Outlook 2007 installed, it can

also display incoming calendar appointments, a tally of new email and the subject headers for each message, all updated in real-time over a wireless connection. This works even if the R400 is closed or in sleep mode, but, unlike with Vista's SideShow technology, the tablet needs to be booted beforehand.

The R400 uses an active digitiser over the 12.1in screen, so the supplied stylus is necessary for writing and tapping on the display. The screen itself is exceptional, with a glossy finish and 1,280 x 800 resolution. Writing on the display is also a delight, providing the right amount of resistance to make it feel like you're writing on paper. Of course, paper can't convert your handwriting to text, which the R400 does remarkably well.

At 1.7kg, the R400 is very light for a convertible tablet, so its underwhelming performance — a typical trade-off for size — is hardly surprising. It uses a 1.2GHz Core Duo U2500 processor, 2GB DDR2 RAM, a modest 80GB hard drive (running at 4,200rpm) and an integrated Intel GMA 950 graphics

card. PCMark05 reported 2,229 PCMarks, while 3DMark06 came in at 213 3DMarks — both of which are slightly below average for a machine of this spec. Still, it feels snappy enough for general web browsing and word processing.

Rounding out the R400's feature set is a fingerprint reader, TPM chip, 802.11a/b/g WLAN, Bluetooth 2.0+EDR and Gigabit Ethernet. Disappointingly, it doesn't have an internal optical drive, nor does it include a memory card reader or ExpressCard slot. Instead, it throws in two USB 2.0 ports, a PC card slot and a VGA monitor port.

The Portege R400 is a visually stunning machine, with superb build quality and a nifty edge display, but those looking for horsepower and stamina should look elsewhere. Also, at this asking price, we'd expected Windows Vista Ultimate rather than Business.

Jenneth Orantia



• **CONTACT** Toshiba
• **ONLINE** www.toshiba.com.au
• **MARKET** Everyone
• **PRICE** \$3,850

✓ Striking design; edge display.

• **VERDICT** ★★★★★

✗ Performance; no internal DVD.

Apple TV

Apple is finally ready to push into your lounge room with the Apple TV, but is your lounge room ready?

The Apple TV's demands are high. It only sports component and HDMI video outputs, the latter of which can be converted to DVI. If your TV only has composite or S-Video inputs, you're out of luck. Televisions with a YPbPr-compatible SCART input should be able to use a component to SCART converter, but most SCART inputs are only RGB-compatible. A wide-screen display is also essential, as there is no 4:3 mode.

If your TV meets Apple's approval, setting up the Apple TV is ridiculously easy. On first startup it checks for available Ethernet or wireless networks. Once online you select 'Connect to new iTunes' and the Apple TV automatically shows up as an attached device in iTunes 7.1 on any Mac or PC on the same network. The Apple TV now gives you a five digit code that you enter into iTunes on your computer and the process is complete. You can also stream content from up to five other computers on the network running iTunes.

The Apple TV features a 40GB hard drive (32.84GB free) so, like an

iPod, you can synchronise content for watching when your computer is offline.

Through iTunes you can separately configure the sync settings for movies, TV shows, podcasts, music and photos. Using Apple TV with a PC is just as easy as with a Mac. If it detects Adobe Photoshop Elements, Adobe Album, iPhoto or Aperture it offers the option of importing from their photo databases.

The Apple TV offers the elegant ease of use we've come to expect from the Cupertino crew, but the real disappointment is content. Our copy of *Pirates of the Caribbean* 'sourced' from the US iTunes store looked surprisingly good even on a 42in LCD HDTV — slightly less than DVD quality but still very watchable. Sadly, Australians couldn't buy movies and TV shows from iTunes at time of writing, and have to make do with music videos, short films and video podcasts.

Vodcasts aren't restricted according to region and many are already optimised for the Apple TV, but there's not a lot to get excited



• **CONTACT** Apple Australia
 • **ONLINE** www.apple.com/au
 • **MARKET** Everyone
 • **PRICE** \$449

✓ Easy to use with Mac or PC.

• **VERDICT** ★★★★★

✗ Only works with iTunes.

about if you want to be entertained rather than informed. You can also play movie trailers from the Apple web site, along with snippets from the iTunes Store's top-selling movies, TV episodes, songs and music videos.

The Apple TV only plays MPEG-4 (.mp4) or H.264 (.m4v) files and only from iTunes — you can't browse folders on your computers. Converting to these formats is time-consuming, and we found just because files will play in iTunes is no guarantee they'll play on the

Apple TV. iTunes has a 'convert for iPod' option, but not for Apple TV. We had mixed results using third party apps such as Wondershare, Lathe and Videora to convert from DivX. The 'Export to Apple TV' H.264 option in the latest version of QuickTime Pro produced very good results.

While the Apple TV can output video in 1080i, disappointingly, it can't actually play 1080i/p video files. It only handles up to 1,280 x 720, which is scaled to your chosen output resolution — 576p, 720p or 1080i. Nor does it handle 5.1 surround sound. The Apple TV doesn't have any trouble streaming HD files over 802.11n or even g, nor should it, considering they're only 720p at most.

Insistence on widescreen and HDMI/component seems hypocritical, considering the Apple TV doesn't support the highest quality audio and video formats. Even so, the Apple TV is an elegant solution that does exactly what it promises to do — play content from iTunes on your television — and does it extremely well.

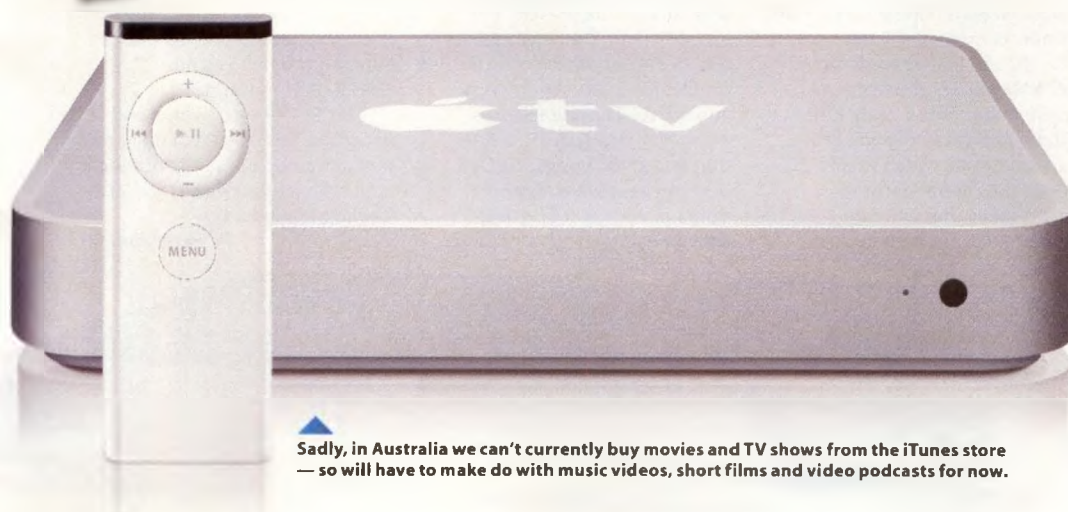
If you love the simplicity of the iPod, iTunes and the iTunes store — and don't care about the dearth of content — you'll love the Apple TV.

If you like to find your content elsewhere, or are looking for true high definition, you'll be frustrated by the Apple TV's limitations.

Adam Turner



THE APPLE TV OFFERS THE ELEGANT EASE OF USE WE'VE COME TO EXPECT, BUT THE REAL DISAPPOINTMENT IS CONTENT



Sadly, in Australia we can't currently buy movies and TV shows from the iTunes store — so will have to make do with music videos, short films and video podcasts for now.



Seasonic M12 700W

Keen for a stable, simple and future-proofed power supply?

The 700W Seasonic M12 is a top example of a solid, simple, yet future-proof power supply. It has everything for the job, without packing superfluous things such as the almost obligatory bright LEDs or the manually speed-controlled fans. There is a certain beauty to its humble simplicity that declares 'Just leave me to it'.

The only real opportunity for hyperbole is offered by its reasonably generous 700 watts of juice. However, considering the way graphics cards are chugging down electricity and demanding more powerful cooling solutions, this amount of power is about keeping the future options fairly open. It's a power supply that's designed to last.

As a modular power supply, the cables are naturally kept tidy for both appearance and improved air flow. It features seven modular install sites on the back, two of

• **CONTACT** Powerhouse PC
• **ONLINE** www.powerhousepc.com.au
• **MARKET** Everyone
• **PRICE** \$325

which are set aside for six-pin PCI-Express cords.

The M12 arrives with three SATA cable sets for eight powered SATA devices in total; four Molex sets for a total of ten such peripherals, and a Molex that splits into two floppy plugs for legacy support. It's also supplied with four six-pin PCI-E power lines that are paired up into two optional modular adapters, so this powerful puppy can easily feed a quad-SLI graphics setup.

Gone are the days of reaching for the pliers when you needed to unplug a stubborn Molex connector. On the Seasonic they all feature a handy human-friendly grip.

It's also a very quiet power supply. Although it features two

✓ Quiet yet quad-SLI ready.

• **VERDICT** ★★★★★

✗ No next-gen 8-pin PCI-E support.

intake fans — including a large 120mm ball bearing fan — that force air out through the fanless exhaust, any noise is easily below the ignorable range. Additionally, the second and smaller fan,

at 60mm, is rarely used, as it automatically flicks on only whenever the temperature exceeds a certain threshold.

If you're a bit of an upgrade addict or fancy a power supply that'll sneeze at the future's power requirements, this'll do nicely.

Nathan Davis



SonicWALL TZ 190

Powerful routing for the small business set — but with a price tag.

Although the TZ 190 is not part of the PRO series, which is designed for companies with large, complex networks, it still feels like an industrial piece of machinery. The TZ 190 is aimed at smaller businesses, but has the look and functionality of an enterprise-grade router. SonicWALL calls its product a "multi-layered network security platform", which is indeed true.

TZ 190's main selling point is arguably its 3G Wireless Broadband Network capability (WWAN). With an approved wireless broadband PC card that plugs into the side of the unit, the TZ 190 can talk to the world through a GSM or CDMA-based 3G telephone network. In places where fixed DSL, ISDN, cable networks are unavailable — which this unit also obviously

• **CONTACT** SonicWALL
• **ONLINE** www.sonicwall.com/apac/
• **MARKET** SMB
• **PRICE** \$1,600

supports — it can connect to a wireless network via digital wireless phone coverage. This can be particularly useful to organisations that set up portable kiosks or mobile POS stations. TZ 190 also features automated WWAN failover and fallback protection. If the current Ethernet connection fails, the unit can automatically switch to WWAN. Once the connection is re-established, the unit can automatically switch back.

✓ WWAN capability; good firewall.

• **VERDICT** ★★★★★

✗ Pay-for security; so-so interface.

Stepping away from the very cool 3G cellular wireless access capability, there is more to explore. VoIP and VPN support are a no-brainer. Both are present and accounted for. User management facilities allow you to set up flexible profiles for local users, groups and guests. The unit features eight 10/100 LAN ports, a WAN port and an OPT port. The OPT port can be used as another optional WAN port or a DMZ port with its own private subnet.

Security services here are an interesting issue, because if you want content filtering, intrusion prevention, spyware and virus detection, email filtering etc., you have to pay extra. This is understandable, though, as most of these services receive frequent updates. On the bright side, the TZ 190 features a powerful deep packet inspection firewall that can apparently defend against 22 classes of DoS attacks.

The TZ 190 is a powerful and expensive router. A lot of small-to-medium companies will not need it, but those who do will recognise its value immediately.

Peter Sbarki



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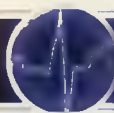


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Chimei CMV946D

Chimei's 19in widescreen LCD takes cheap and cheerful to a new level.

Wide-screen LCDs are all the rage these days and rightly so — they provide more screen real estate to work with and games look fantastic on them. But that real estate costs more, naturally, and this puts the LCDs out of the range of some budgets.

That's where Chimei comes in — unashamedly cheap, this smaller cousin to the 22in we reviewed last month offers a smaller 19in expanse and a price to match.

But what's it like to use? For one, the fixed plastic stand gives it only a title motion up and down — height can't be changed, so you'll need a couple of Yellow Pages to get it to eye-level.

As usual with LCDs running in anything but native resolution, text

is horrible to look at, so we quickly switched to the CMV946D's native 1,440 x 900 resolution for testing. In terms of clarity, as an LCD, text and images were clear, and almost as sharp as more expensive LCD monitors we've seen. Putting it through Nokia's NXXX tests, the colours were excellent and the contrast good, with only the bottom two per cent of the blacks indistinguishable, reflecting its 650:1 contrast ratio. Some noise was present in the focus and moire tests, but otherwise the monitor passed nicely.

The CMV946D comes with D-Sub and DVI-D inputs, and preset settings for picture (high brightness) and text modes, as well as an auto-adjust mode for the analog signals.

All the usual functions are there for brightness, contrast and color adjustments, and oddly a button titled 'Turbo' that actually isn't, although it does claim a speedy 2ms (grey-to-grey) response time.

If you want to get into the wide-screen rage, the Chimei CMV946D will certainly let you do that at a price that can't be beat — at \$299 it's not only cheap for a wide-screen LCD, it's cheap for any 19in LCD.



Ashton Mills

CONTACT Protac

ONLINE www.protac.com.au

MARKET Everyone

PRICE \$299

✓ Cheap and cheerful. And cheap.

VERDICT ★★★★★

✗ Fixed stand; flimsy build quality.

Thermaltake BachVX

A desktop case that aims to mix form and function — and mostly succeeds.

Thermaltake have been aggressively pushing their range of cases for a while now — and indeed some of them are excellent in

both design and aesthetics. The same is true of the new BachVX, though it doesn't seem quite as polished as other models have been.

First and foremost, the BachVX features an extruded plastic fascia and transparent side panel — together, these actually look really cool.

Although plastic, they're both quite sturdy, and both fascia and panel unlock via a key lock to give access to the drive bays for upgrades and to clean the front in-take dust filter — so make sure you're careful not to lose the keys!

The front intake itself comes with a beefy Thermaltake 140mm fan, great for pulling air into the box. A 120mm exhaust vent is present on the back of the case, but no fan is provided.

The BachVX comes with plenty of space for expansion — four 5.25 bays, two 3.5 bays, and a rack for up to five hard drives, positioned directly behind the intake vent for cooling. The rack is removable for easy installation and comes with rubber grommets to reduce conductive noise vibration from the drives — a nice touch.

Inline with its sleek finish the fascia sports two metal buttons for power and reset, which have a satisfying resistance to them when pushed. The usual USB and audio ports aren't present however —

these have been relocated to the top, with the addition of an eSATA port. These are hidden under a lid which, unfortunately for our review model, was sticking up even when closed. A little bit of fiddling soon had it sitting flush with the top of the case, but the lid is flimsy and not at all sturdy.

About the only feature we'd have liked to see is a removable motherboard tray, but the BachVX just isn't designed for it — the various case panels are pot-riveted to the board.

PCI clip-locks for expansion cards, a side 90mm fan vent (though with no means to actually attach a fan), and retractable feet round out a solid package.

Ashton Mills

CONTACT Thermaltake

ONLINE www.thermaltake.com

MARKET Performance enthusiast

PRICE \$179

✓ Design; aesthetics; upgradeable.

VERDICT ★★★★★

✗ No exhaust fan; fiddly plastic bits.



ASUS EN8800GTX AQUATANK

With this graphics card, ASUS has basically done all the overclocking for you.

Standing out from the crowd in the noisy graphics card arena has always been a challenge. In a bid to differentiate its GeForce 8800GTX card from the rest, ASUS has whacked on a water-cooling system from Thermaltake.

The cooling unit is separate to the video card and it arrives in the form of what's essentially another

chunky video card. It sports a coolant reservoir and a 72-litre/hour pump; is full of anti-freezing and anti-rusting coolant; and steals another two expansion slots.

Yes, this mother of all graphics cards takes up four expansion slots in total. Not only that, but it's quite specific, requiring a PCI slot in which to rest its blank slot-filler.

This is no doubt a considerable drawback for some.

Due to its somewhat expansive layout, running two of these beasts in SLI is improbable at best, even when ripping pointers from MacGyver's Duct Tape Bible.

Chunkiness aside, the watery 'TANK' certainly lives up to its frank name, especially when cooling at its highest fan speed. In terms of noise output, the cooling unit prances around the vicinity of a miniature blow-dryer. At

3,000rpm, this little monstrosity can blow air like it's going out of fashion. The unit has a fan-speed selector on its side, with options of low-speed or ear-bleeding loud (or, as ASUS calls it, 'high speed'). Thankfully, it functions just

fine at the lesser-ear-terrorising setting. If you demand some noise, though, you're in luck, as the 3,400rpm pump is always a little on the 'noisy fish tank' side.

With a core speed of 630MHz and an effective memory clock of 2.06GHz, this is one hellishly fast card, even in the face of other 8800GTXs. ASUS has basically done all the overclocking for you, and that's inherent in the 3DMark06 score of 10,211.

Ultimately, this water-cooled monster is for those who demand graphics performance that practically bleeds itself out of the box. If you don't mind losing every expansion slot on your motherboard, the supremely priced 'TANK' is your weapon de la crème.

Nathan Davis



CONTACT ASUS
ONLINE www.asus.com.au
MARKET Performance enthusiast
PRICE \$1,249

✓ Extremely meaty performance.

VERDICT ★★★★★

✗ Steals most expansion slots.

ASUS M2N32-SLI Premium Vista Ed.

This mean motherboard handles anything you throw at it.

Based on Nvidia's feisty GeForce 590 SLI chipset, this motherboard is designed from the ground up for performance enthusiasts. Sure, it's unable to handle quad-SLI, but it has pretty much everything else covered. It even includes an IR remote control for us couch potatoes.

Plus, it's equipped with a Friday night party's worth of extras, perhaps the most unusual of which is the ASUS ScreenDUO. This is a little LCD screen with controls that plug into a USB port. It synchronises with your computer so that when your computer is off, you can view, for example, your contacts or even RSS feeds.

It's basically a wired PDA/remote. When your computer is on,

it can also display the computer's temperatures, change the volume, and even control iTunes, among many other things.

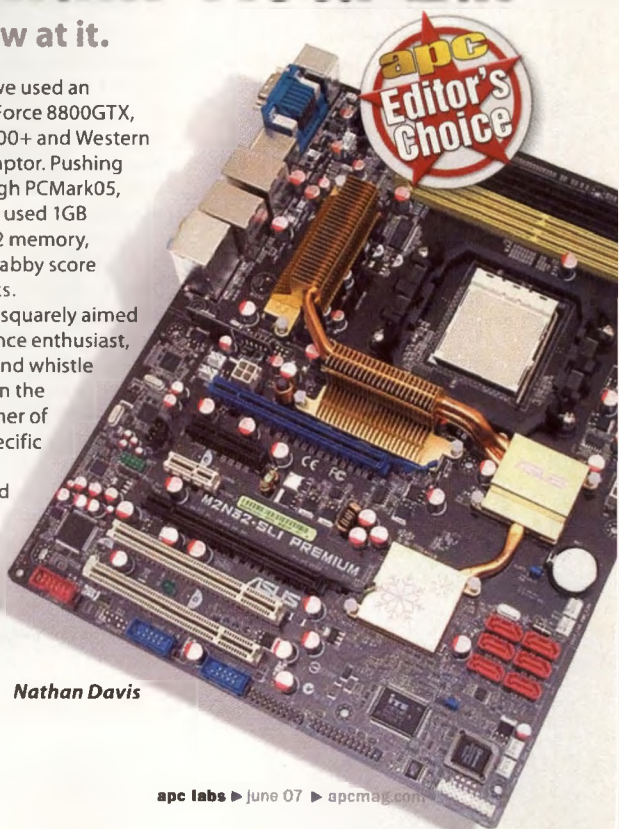
This motherboard's on-board cooling is entirely silent. It features a pair of copper heat pipes, which connect the four main passively cooled heatsinks together. The heat is dissipated by the CPU cooler. The board includes a small fan, which you must clip onto the heatsink just behind the IO ports.

Including the motherboard's cooling system, the layout is superb. The placement of the memory slots at the top, above the CPU socket, designed with ease of access in mind as well as efficient cooling. You can fit some fairly sizable CPU heatsinks in there.

For testing, we used an overclocked GeForce 8800GTX, an Athlon X2 6000+ and Western Digital's 74GB Raptor. Pushing the board through PCMark05, even though we used 1GB of 533MHz DDR2 memory, it hit a not-so-shabby score of 6,772 PC Marks.

This board is squarely aimed at the performance enthusiast, with every bell and whistle made available in the BIOS for all manner of marvellously specific tweaks. Plus, it's just a damn good performer.

And don't worry about the 'Vista' tag, as it was perfectly awesome under Windows XP.



CONTACT ASUS
ONLINE www.asus.com.au
MARKET Performance enthusiast
PRICE \$399

✓ Fast; feature-packed.

VERDICT ★★★★★

✗ Lacks quad-SLI capability.

Nathan Davis

Samsung BlackJack

Does the BlackJack have the goods to ace the BlackBerry?

In both name and nature, Samsung's BlackJack clearly intends to trump the BlackBerry. This super-slim smartphone (1.2cm profile) has mobile email, a 1.3-megapixel camera, multimedia, and HSDPA.

Based on Samsung's earlier i320 model, the BlackJack fixes some of that phone's shortcomings. The backlit keys are easier to press and more responsive. However, the round D-pad navigation controller sits too close to the soft menu and Send and End keys, making it too easy to accidentally brush one of the four keys while trying to click or scroll through the interface. The oddball keyboard layout spaces dial-pad numbers along every second vertical row.

Fortunately, you can use the scroll wheel and back button, which also aids in one-handed operation.

A big gripe is that Samsung still insists on a proprietary connector for the charger and headphones, instead of a mini-USB jack.

While the Windows Mobile 5 Smartphone Edition OS doesn't allow editing of Office documents, you can view email attachments through the pre-loaded Picsel viewer. This also renders PDF files exceptionally well on the BlackJack's vivid 2.2in 320 x 320-pixel screen, which makes for bright colours and sharp text.

Most of the software offering is par for the Windows Mobile course, although Samsung's organiser suite includes a simple notepad and

world time clock, plus a converter.

The pop-up quick launch menu runs your favourite apps, opens documents and jumps straight to a web page. But the unit is only fitted with a 220MHz CPU.

As an HSDPA device running on Telstra's Next G network, the BlackJack can be pressed into service as a 1.8Mbit/s mobile modem for your notebook. You should expect anywhere from 600Kbit/s to 1.2Mbit/s depending on location.

Battery life was a relatively modest four hours of talk time, with a nightly charge recommended if you're using push email. The BlackJack comes with a spare battery, plus a drop-in shell which allows charging while you're out and about.

David Flynn



CONTACT Samsung

ONLINE www.samsung.com.au

MARKET Prosumer

PRICE \$899

✓ HSDPA connectivity; slim; camera.

VERDICT ★★★★★

✗ Key layout; no mini-USB.

RIM BlackBerry 8800

An update to the previous series, still with excellent battery life.

The traditional built-for-business BlackBerry form factor gets a Pearl-inspired polish while also picking up a few fresh tricks in the new 8800 line.

The most obvious trait is of course the translucent white

trackball, which replaces the side-mounted wheel and much of the painful 'BlackBerry thumb' associated with it.

The shift to front-mounted navigation also makes the 8800 a better device for left-handers, but we found the device produced mixed results depending on the task. The free-wheeling motion is a boon for scrolling through emails and cluttered inboxes, though the lack of any detents makes it more difficult to move in smaller steps for tasks such as navigating menus and the home screen.

The other call-out feature is the built-in GPS receiver and bundled BlackBerry maps of major Australian cities. However, the maps were unavailable at the time of launch (and our review),

although you can purchase alternative BlackBerry-based mapping solutions or access Google Maps.

While BlackBerry-optimised content favours incredibly small file sizes, the 8800's use of the GSM network rather than 3G still puts a choke on download speeds.

Another hand-me-down from the Pearl is highly accurate voice dialling, which works for any string of numbers as well as names already in the address book.

Alas, the tightly-packed keyboard represents no such step forward from the 8700 family. With almost no gap between each key, you'll want small fingers and an accurate touch to get back up to a decent two-finger typing speed.

While the 8800's screen is the

same 2.5in size as that of the 8700, it employs the substantially brighter and richer display module of the 8100 Pearl for far sharper text and more vibrant images. Light-sensing technology adjusts the backlighting of the screen (as well as the keyboard and trackball) based on the current ambient light.

In keeping with the slightly more consumer look of the 8800's elongated design, slim profile and chrome fairing, RIM has also fitted the 8800 with the Pearl's multimedia engine for a little downtime between meetings. Music and video (the latter is restricted to a handful of formats) can be loaded onto a microSD card, which slips into the rear panel.

Battery life is still one area where the BlackBerry excels, with our test unit clocking three days between recharges.

David Flynn



CONTACT RIM

ONLINE www.blackberry8800.com

MARKET Prosumer

PRICE \$899

✓ Inbuilt GPS; trackball scrolling.

VERDICT ★★★★★

✗ Difficult keyboard; GSM.

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BusinessBreeze XS/SM

Simple bookkeeping — but maybe too simple?

BusinessBreeze now comes in two versions, XS and SM (extra small and small-medium?), the difference being that SM includes payroll.

The initial setup is a bit of a mystery, as there doesn't seem to be any explicit provision for entering opening balances, stock levels and so on. The Help command opens a PDF file, with one topic per page — that's not a convenient format.

The address book is automatically populated with customer or supplier details from invoices and orders — very handy. BusinessBreeze similarly lets you create items on the fly, so there's no need to start by entering a catalogue of your goods or

services. But the program doesn't stop you from accidentally creating two or more different items with the same code, which can lead to confusion.

When creating a cash sale invoice, you can't mark it as paid there and then — you must save the invoice and then go to the cash book to process the payment.

Using the tab key to jump between fields doesn't work everywhere. For example, you'll need to use the arrow keys or mouse instead when entering line items on an invoice.

Clicking the Print icon gives a preview of the current document or report in a browser. (BusinessBreeze honours the default browser setting rather than

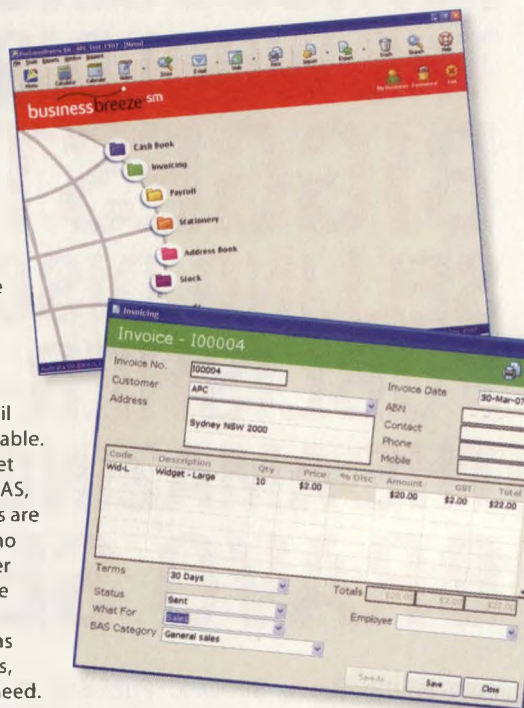
insisting on Internet Explorer as programs too often do.) Some fields were truncated onscreen — they printed correctly, but a slightly larger font size used for the detail lines would be preferable.

The GST Worksheet isn't a replica of the BAS, but the item numbers are clearly shown so it's no great effort to transfer the information to the printed form.

BusinessBreeze has been around for years, so it clearly meets a need. It would help small business owners meet their tax reporting obligations, but doesn't do much to help them manage their business. If you're still using a manual system and you rarely

need to chase unpaid invoices, take advantage of the 60-day free trial to make up your own mind.

Stephen Withers



• CONTACT Zions

• ONLINE www.businessbreeze.com.au

• MARKET SMB

• PRICE XS, \$195; SM, \$295

✓ Generally simple to use.

• VERDICT ★★★★★

✗ Very limited reporting; poor help.

Toshiba TDP-P8

Need a projector on the run? Toshiba's latest almost fits in your pocket.

Toshiba's TDP-P8 data projector is unashamedly designed for the road warrior, with a compact form factor of 200 x 75 x 154mm (WHD) and weighing just 1kg. It even comes with a carry case.

Under the hood it's quite a capable little machine, utilising DLP and a 156W 1500 ANSI-lumens lamp. This gives it good range — and indeed it's rated for up to 12

metres — and the excellent colours and contrast DLP provides, including a 2100:1 contrast ratio. As a data projector, there's no wide-screen magic here, with the native resolution of the DMD panel at 1,024 x 768. This is, usually, plenty for business use, but also lends itself to quality video playback as well.

In testing, the suggested range was about right, though the

• CONTACT Toshiba

• ONLINE www.toshiba.com.au

• MARKET SMB

• PRICE \$3,150

✓ Compact; light; great DLP quality.

• VERDICT ★★★★★

✗ Not cheap; fiddly remote at times.

brightness of the image quickly declines as soon as you move past seven metres.

Inputs are provided for D-Sub, S-Video and composite, which covers everything you need for a data projector. A USB connection is also provided to allow the remote to act as a mouse.

Image quality was great and (while positioned at six metres) nice and bright: colourful with excellent contrast — and it handled motion including (just because we can) DVD playback excellently.

The remote fits comfortably in the hand and has a built-in laser pointer, great for referencing all those boring charts or giving your cat something to chase. And really, this is our only complaint — a neat tilt wheel for mouse movement is rather bad at navigating the projectors setup menus, and we resorted to using the top-mounted keypad to save sanity.

Speaking of which, all the usual options are there for correcting keystone, brightness, contrast, tint, sharpness and source image aspect and more, and the fan is quiet enough to not be disturbing unless you listen for it.

All up, the TDP-P8 seems well-designed for its intended road warrior market.

Ashton Mills





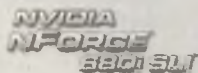
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- 2* IEEE1394a



P9657AA-8EKRS2H

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- 1* PCIe x16
- 6* SATAII, 1* eSATAII, RAID
- 2* IEEE1394a



975X7AB-8EKRS2H

- Intel® 975X chipset
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ASUS S102 PND

ASUS tries again with satnav technology.

Better known for its computer components than consumer electronics, the S102 is actually the second time ASUS has tried its hand at portable navigation. Rather than compete on high-end features or cutting-edge design, the Taiwanese PC giant has opted for the entry-level route, slapping it with a competitive sub-\$600 price sticker that should prove attractive to bargain hunters.

Strong navigation performance is the S102's main appeal. Acquiring a satellite fix typically takes under a minute, while route calculation is a speedy couple of seconds. Voice navigation is also spot-on, with regular reassurance that you're still headed the right way on long stretches and ample warning before turns.

Letting the S102 down is lacklustre re-routing. When you take a wrong turn, the device doesn't

acknowledge that you've done so. Instead, it re-routes silently and slowly, taking up to 15 seconds to display a new turn.

The S102's menu system is driven by large, tap-friendly buttons on the 3.5in touchscreen. This is simple enough to use, but some of the advanced options are difficult to find. Switching to Pedestrian mode, for instance, is in the Map Manager rather than Settings, and setting up multiple stops is hidden away in Extras rather than in the Route Manager.

Map display is available in 2D, 3D and night mode, and while the map renderings are basic, they're easy to follow. The navigation screen is littered with useful information in large text, including

CONTACT ASUS
ONLINE www.asus.com.au
MARKET Everyone
PRICE \$549



the distance, direction and street name of the next turn, and the distance and time remaining to destination. The only problem is the space this takes up; on the smallish 3.5in QVGA screen, it doesn't leave a lot of room to see the map.

Sitting in the engine room is the

standard SiRF Star III chipset, along with an internal antenna, 266MHz Samsung processor and SD slot. Owing to the relatively Spartan 64MB ROM and 64MB SDRAM, the Australia-wide maps are loaded on the supplied 512MB SD card rather than the device itself — a hassle if you want to upgrade to a larger card to use the S102's music and photo playback features.

Jenneth Orantia

✓ Strong performance.

VERDICT ★★★★★

✗ Slow re-routing; limited map display.

Linksys WRVS4400N

This wireless security router also has VPN.

The WRVS4400N is a gigabit security router that implements the draft 802.11n (Wireless-N) standard that is yet to be ratified by the IEEE. It is not known whether the final version of the standard will remain compatible with the draft versions. However, it doesn't stop Linksys and a host of other manufacturers from offering 802.11n routers and networks adapters to the consumer.

The WRVS4400N is a traditional router with inbuilt VPN support and a greater focus on security. It features four full-duplex 10/100/1000 LAN ports and a WAN port for your modem. The big promise is, of course, the increase in wireless data rate, in the form of 300Mbit/s at 69dBm, achieved by the use of a Wireless-N modulation technique called MIMO (Multiple In, Multiple Out). The router remains backward compatible with Wireless-G and -B.

We tested WRVS4400N with a Linksys Wireless-N Business Network Adapter (WPC4400N). At a close range we were able to achieve the full 300Mbit/s. However, as we moved further away from the router, the situation dramatically worsened. We were only behind two brick veneer walls when our data rate dropped to about 39Mbit/s. It kept continuously jumping from 39Mbit/s to about 52Mbit/s and sometimes completely dropping out. Swapping out the WPC4400N with a normal 802.11g card brought the data rate to a stable 54Mbit/s. Further tests showed that, under Wireless-N, signal strength dropped too quickly.

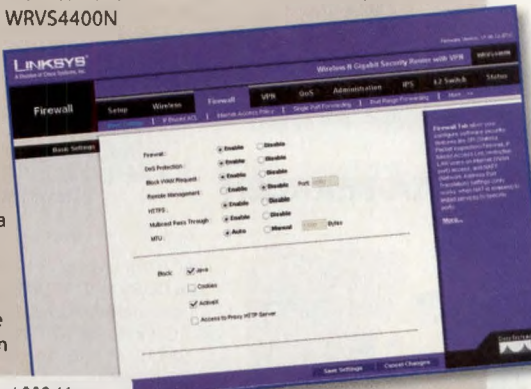
There are two possible explanations for this. Either the

network adapter WPC4400N is not up to scratch or the router's implementation of 802.11n still needs further work. Either problem could be corrected by future releases of firmware. On the bright side, the level of security that WRVS4400N provides is ideal for a SOHO environment. WRVS4400N supports IP-based and MAC-based access control, SPI firewall, content filtering via URL and keyword blocking, port-based RADIUS authentication and a good Intrusion Prevention System (IPS). WRVS4400N can even deny some web features — such

as java or cookies — to all users connected to the network.

The overall performance of Wireless-N was a letdown, but we hope that it will improve. Apart from that, the WRVS4400N is generally a fine and capable router.

Peter Sbarski



CONTACT Linksys
ONLINE www.au.linksys.com
MARKET Performance enthusiast
PRICE \$480

✓ User interface; good 802.11g.

VERDICT ★★★★★

✗ Poor 802.11n; only four LAN ports.

WRVS4400N can even defend against DoS attacks.



WIN the ultimate game

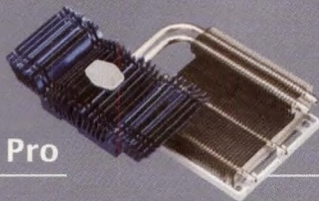


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uTorrent 1.6.1

Low-impact BitTorrent client doesn't skimp on features.

UTorrent is a light-weight BitTorrent client with a special focus on conserving system resources. Its memory footprint is noticeably less than that of the other major clients, like Azureus and BitComet.

On our test machine, µTorrent consumed approximately 1.5MB of memory. Running side-by-side, Azureus consumed a bit over 45MB of RAM. A focus on memory consumption and speed, however, doesn't equate to a program stripped of features and functionality. Surprisingly, µTorrent is as feature-rich as some of the bigger clients.

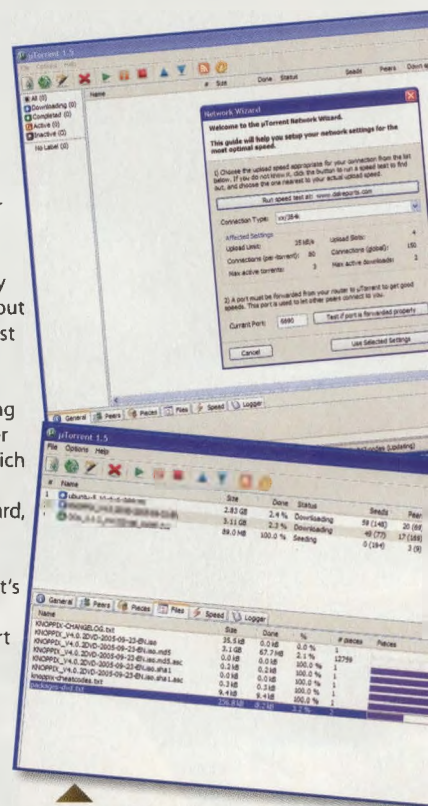
µTorrent supports super-seeding and UPnP, but not NAT port-mapping. It supports the official version of DHT and Peer Exchange (but only with other µTorrent clients) as well as Protocol Encryption (PE), which makes it compatible with Azureus and BitComet. Other useful features include support for SSL, proxies, trackerless torrents, prioritisation and selective downloading. It has an embedded tracker and an inbuilt RSS broadcatching system. A configurable bandwidth scheduler is included as well as the ability to set download and upload speeds (global and per torrent).

µTorrent's interface is easy to navigate. The main window is split into two sections. The top section shows which torrents are being downloaded. The bottom section reveals details on peers, pieces

downloaded, transfer and tracker status as well as some other interesting information.

µTorrent doesn't have as many options to configure as Azureus, but there are still enough to keep most users happy. The user has access to a preferences section where connection, queue and scheduling settings can be changed. The user can also access 'Speed Guide', which helps to set up correct network settings. It's not a fully fledged wizard, but it's helpful. µTorrent also supports 38 different languages, which is phenomenal given that it's not an open source program.

Although µTorrent has support for different skins, it doesn't support plug-ins. But this is not a terribly bad thing if you don't — like most of us — need extra features. µTorrent has pretty much everything one could want and it is lean and fast.



µTorrent's interface is logical and intuitive.

Peter Sbarski

CONTACT µTorrent

ONLINE www.utorrent.com/

MARKET Everyone

PRICE Free

✓ Small size; memory consumption.

VERDICT ★★★★★

✗ No plug-in support; not open source.

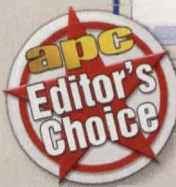
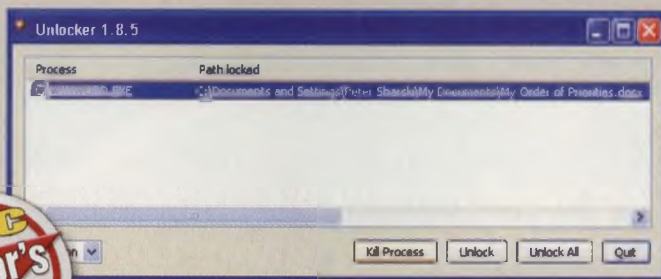
Unlocker 1.8.5

Tired of not having control over locked files?

Unlocker is a program which lets the user assert control over files locked by programs. If you have ever tried to delete or move a file that was opened and locked by another program, you would have gotten a message stating:

'Cannot delete file: access is denied'. Or any other variation of this message including: 'There has been a sharing violation', 'The source or destination file may be in use', 'The file is in use by another program or user' and 'Make sure the disk is not full or write-protected and that the file is not currently in use'.

Unlocker is so useful that it is now installed on all Windows machines owned by this reviewer. In fact, it's a little mind-boggling that, in terms of must-have utilities for Windows, Microsoft has never



released anything remotely as useful. PowerToys for Windows would have been a lot more appreciated had it a utility similar to Unlocker included.

Usually, to make any of the above messages go away, the user would have to hunt down the appropriate program and shut it

down. More often a reboot would be required. However, with Unlocker, that's no longer the case. Unlocker automatically kicks-in when the user tries to move, delete or edit a file locked by another program. It shows which process (program) is in charge of the file and gives the user an option to kill the process or unlock the file

Unlocker is brilliant. It hasn't let us down yet.

(thereby returning control of the file back to the user).

If Windows were more like Linux, it would have been easy to manually find and kill the appropriate process. Unlocker is the next best thing. It can close handles, kill processes, unload DLLs and remove that pesky index. Not to mention that it can delete, copy, rename or move locked files.

Unlocker also adds itself to the right-click context menu so the user can manually invoke it to check which locking handle, if any, is associated with a file. In most cases, however, it's enough for Unlocker to automatically react to your actions. It has already saved us a number of reboots and it will do the same for you.

Peter Sbarski

CONTACT Cedrick Collomb

ONLINE ccollomb.free.fr/unlocker/

MARKET Advanced users

PRICE Free

✓ Small; extremely useful.

VERDICT ★★★★★

✗ Should have been created sooner.



GRAPHICS BY



Green With Envy

Stop Craving and Start Playing

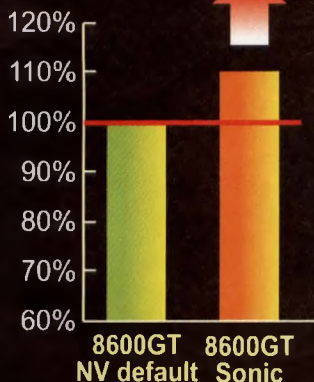
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DirectX10 support
Dual Dual-link DVI support



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Memory/Core speed : 1600/600 MHz
DirectX10 support
Dual Dual-link DVI support



8600GT

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DirectX10 support
Dual Dual-link DVI support



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Gwget 0.98.2

How do you improve one of the best Linux tools? Slap on a GUI!

If you've been using Linux for a while, you've likely come across wget, the universal file transfer application that includes everything and the kitchen sink, because, simply, it's just that good. Whether you want to fetch a single file via FTP or HTTP, or mirror an entire web site with a single command, wget will do it for you quickly and easily.

But like many of Linux's most powerful features, it's a command-line tool that requires at least an hour on the manual page, coffee in hand, to decipher and appreciate its hidden gems. The alternative — whack on a GUI, and point and click — this is what you get with Gwget, the wget download manager.

Clicking 'New' allows you to

specify a URL, just as with wget, for Gwget to fetch. Even better, just like its smart command-line counterpart, any URL in the clipboard is automatically used when you select 'new', so you don't even have to paste. Or, failing that, you can simply drag a URL from your browser to the Gwget window. Most of the essential wget settings are there — resume for FTP and HTTP transfers, pause and re-start downloads, bandwidth throttling (for download speeds only), and the powerful recursive settings. These allow you to completely mirror an FTP or HTTP site, given access, and not only retain the structure but even convert links to be relative to the local file system (so if you

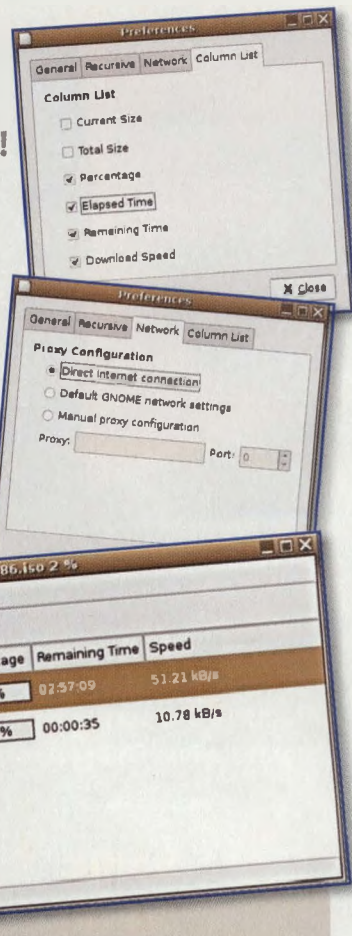
download a web site, the paths match the location to files relative to your download location).

PHP and ASP are supported as well, and all give the option to download everything or just components from the source URL. wget is one of the most universally useful and powerful Linux tools, and Gwget makes it just that little bit easier to take advantage of, especially for the Windows junkies.

Ashton Mills

CONTACT Gwget
ONLINE www.gnome.org/projects/gwget
MARKET Everyone
PRICE Free

✓ wget with all the features.
VERDICT ★★★★★
✗ A little unstable at this release.



K3B 0.12.17

The ultimate burning software for Linux?

Like networking software, Linux is no stranger to CD and DVD burning. Some of its command line tools are used for professional production and mastering of recordable media, so it's no surprise there's a plethora of GUI-based

burning applications to boot as well. The oldest and most popular ones include XCDRoast and GnomeBaker (and newer ones, such as the Gnome-based Brasero, APC April, page 46).

K3B, as its name suggests, is a KDE native burner that, like many larger burning applications, is project based — you can build and burn music, data, and video media for both CD and DVD. Naturally, there are also automated functions to duplicate CDs and DVDs, as well as burn ISO images. Building images is as easy as dragging and dropping the directories or files you want to burn. CDDb can automatically be looked up as well, and, for those trying to squeeze out every last meg, overburning can be forced.

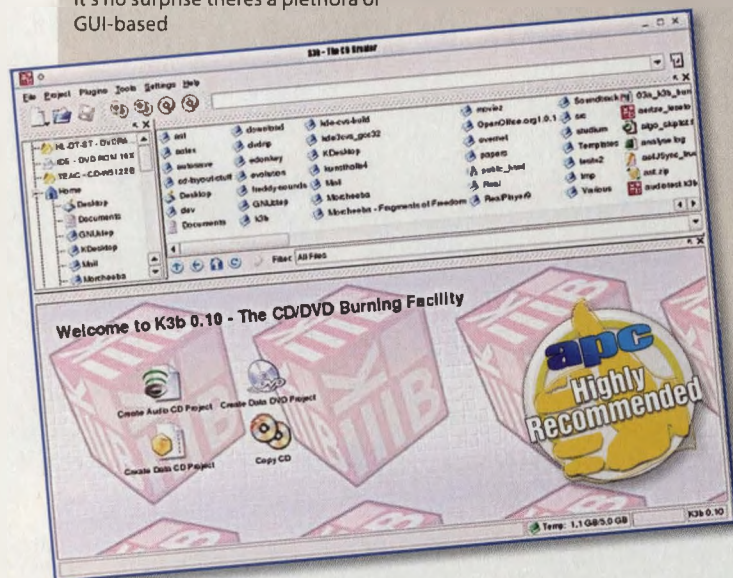
One of the features that really sets K3B apart is its video encoding options — you can literally rip a DVD and encode it all within K3B. A good selection of encoding options are available, including choice of codec, two-pass

encoding, automatic resizing and cropping, and the option to split into pre-defined sizes for removeable media.

Naturally, K3B depends on the range of Linux command line imaging and burning tools to be installed, including mkisofs, growisofs (for DVD), cdrdao, cdrecord, readcd, and the range of transcode files for ripping.

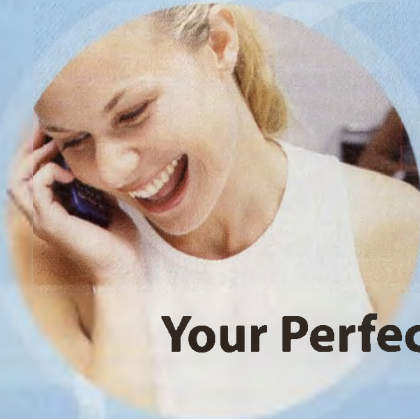
If you're looking for a native KDE-based burning tool with all the essential goods, take a tour around K3B. Note that K3B 1.0 is nearing release, with K3B 1.0RC7 available as source at the time of writing. If you don't mind playing with source, give it a go — otherwise most distributions will have the 0.12.17 binaries.

Ashton Mills



CONTACT K3B
ONLINE <http://k3b.plainblack.com/>
MARKET Everyone
PRICE Free

✓ Everything you need, plus DVD rip.
VERDICT ★★★★★
✗ Lots of dependencies for install.



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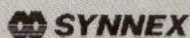
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Ableton Live 6

The music DJ program has had a makeover, but is it better than before?

Live has changed the music industry, and that's no exaggeration. A favourite with bedroom DJs and live performers — it can be found at laptop jams everywhere. It offers an unprecedented collection of loop playback and sample-mangling features orientated toward the live performer. Live 5 seemed to have reached a feature-set plateau with all of the looping bases covered and some interesting but somewhat tentative excursions into further territory in the form of new instruments and effects.

Live 6 has generated a lot of interest and speculation over whether it's a me-too upgrade or a revolutionary reboot. Going through the new features will help clarify which direction Live has gone.

First off, there's multiprocessor support. This was sorely missed in Live 5 and if you have a multicore machine or laptop you instantly have twice the power available to you. For many potential buyers this should be enough to swing the deal. It means that marginally overtaxing arrangements that exhibit clicks and pops should now play effortlessly, and the option is there to add live softsynth performances on top.

IDIOSYNCRATIC DESIGN

There's a similar leaning towards productivity rather than creativity in the remaining changes. The browser has been updated to make it slightly simpler to use, though it's still some distance from the familiarity of Windows Explorer. And Live's idiosyncratic design, which hints at scroll bars rather than giving you a more familiar visual reference to make it obvious where they are, hasn't been modified. The mixer, on the other hand, now offers more useful metering. The meters have always been slightly token; used more as a visual effect than any kind of reference. In this version, they include nominal dB markers and more useful overload indicators.

The individual channels have been extended with more flexible routings. You can now make track-to-track connections PreFx, PostFx



Video can be inserted into the Arrangement timeline. You can chain multiple clips but there's no overlapping or crossfading.



YOU CAN SPLIT A TRACK INTO HIGH AND LOW FREQUENCY BANDS AND PROCESS THEM SEPARATELY

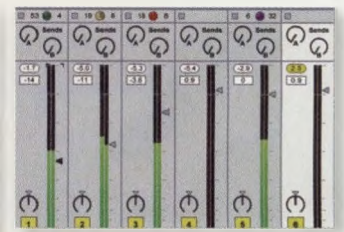
and PostMixer, so you can split a track into high and low frequency bands and process them separately, for example. Although it's a small change and might seem like a subtle difference, it does open up new possibilities for those who are willing to experiment with it.

EFFECTS AND EXTRAS

There are some new effects but it's not the effects blow-out of Live 5. Saturator has been extended slightly and there's also a new Dynamic Tube effect that is similar but has a wider range. EQ Eight is like EQ Four, but with eight bands of EQ instead of four — interesting, but not exactly the stuff of legend. There's also a panning tool called Utility for use with effects chains and a MIDI

processor that can control note lengths. Finally, there's the optional extra instrument sampler called — funnily enough — Sampler, which is reasonable value at \$250 extra.

The other new features are a grab-bag of odds and ends. ReWire has been extended so that it now accepts incoming MIDI, to enable you to send MIDI to Live from a ReWire host. Very basic video support has arrived in the Arrangement window; you can load and play a clip, but that's about it. Warp markers and tempo master clips have been added to make video sync easier, although getting music and sound to play in time with video remains a challenge — which is not Live's fault, because it's always this way. More usefully, instruments



The mixer now has dB marker ticks, although they're not numbered, so they aren't that useful.



If you're used to Live 5, you'll find that on the surface not much has changed.

CONTACT Ableton
ONLINE www.ableton.com
MARKET Performance enthusiast
PRICE \$949

✓ Multiprocessor support; features.

VERDICT ★★★★★

✗ No compelling upgrade path.

and effects can be grouped into racks with optional global multi-parameter controls. This emulates some of the features of other multi-plug-in grouping tools and creatively it's one of the more powerful new features, especially considering the preset collection that comes with Live 6.

So what does it add up to? For newcomers who want a live loop DJing and playback tool, Live is still very hard to beat. But for upgraders, there's not quite so much to get excited about. This is more of a would-be-useful upgrade than a must-have — worth looking at, but not quite compelling enough to require an instant trip to the web store. If you use a multiprocessor laptop, you'll want the new multiprocessor support. If you don't, the extra features are useful but won't drastically change the amount of music you can make with Live.

Richard Wentk

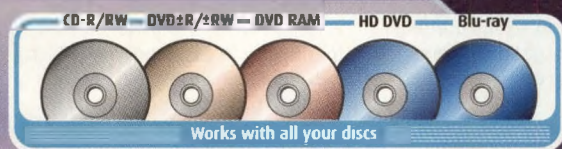
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Adobe Creative Suite 3

We take a look at how Adobe's handled the latest-release CS3 software bundle.

Adobe has released the first all-round design pack for web, print and video. Utilising both the Macromedia and Adobe brands, CS3 is the one-stop-shop for creative professionals.

With a more integrated workflow, CS3 allows more to be done with fewer keystrokes and reduces the need for jumping from one piece of software to another. On the surface, CS3 still looks pretty much the same and may not be light years ahead of CS2, but the steps it has taken have all been in the right direction.

Like Microsoft's Vista release, Adobe has gone for the concept of multiple release versions of CS3 in a big way. There are six different packages you can choose from depending on your needs. With a massive selection of 14 pieces of software, Adobe Creative Suite 3 Master Collection is the all-in-one package for professional print, web and now video editors/designers. At \$4,000 though, we recommend you grab yourself one of the cheaper, more specialised editions that concentrates more on your individual needs.

Software across the range includes the major print titles such as InDesign, Illustrator, Acrobat Professional, Acrobat Distiller and the massively popular Photoshop just for starters. Also included are the essentials for designing and

building web sites. Fresh from its acruement from Macromedia and now with their Adobe branding, Flash, Fireworks and Dreamweaver fill out the package.

Adobe has also introduced a few new additions to the packages in the forms of smaller pieces of software that many readers may not be aware of. These are intended to complement — as well as add functionality — to the more major components.

Here's a quick rundown of what's included:

Adobe Bridge

Works as a hub for settings and styles across all CS3 software.

Adobe Contribute

Used for web development and site maintenance.

Adobe Device Central

Emulates a variety of devices such as PDA's and phones so you can design and preview skins and functions for mobile devices.

Adobe Extension Manager

Manages extensions for CS3.

Adobe Stock Photos

Image sorting and access system.

Adobe LiveCycle Designer

Creates Live forms for PDF that can be printed or filled in online.

Adobe Flash Video Encoder

Import and edit video using Flash.

When we installed the 4GB Master Collection (which took around 90 minutes) and had our first glimpse of the new software, the first thing that came to our attention was that the softwares' icons had been redesigned. This may not sound like a big deal, but the earlier version icons were a bit too similar for fast identification. Especially when each of your taskbar buttons are squeezed to about two centimetres wide, the difference between Adobe InDesign and Adobe Photoshop became hard to spot when you're in a hurry.

WORKING WITH CS3

The workspaces on all CS3 software share a similar look and feel as part of Adobe's key aim of integration between the Macromedia and Adobe products. Due to this, navigation is simplified and finding the desired menu or style is easy.

Even though there are a lot of new minor features in CS3, there are no major functionality changes that will make it a must have. Adobe seems to have gone more for the benefits of speed and stability than ground-breaking features. Each component does its job well and there are no major flaws or



problems with any of the software that we can see. The obvious visual change throughout is the alteration of the pop-out menus button from the familiar 'arrow in the circle' to three inconspicuous lines. This caused 'where the hell has that button gone?' to be muttered around the office for the first few hours of use.

Due to some software being rebuilt from scratch, the usability is still as good as ever and the programs even seem to run a bit faster than their predecessors. As experienced users will be aware, there are too many features to go into too much detail here without writing a manual-sized document. A list of the more impressive changes for the major three pieces of software can be found on the page opposite.

One sad omission from the list is the ability to save documents in InDesign as earlier versions. This is actually the second layout created for this article, as the original, which was created in InDesign CS3, was found to be near impossible to export to InDesign CS without an .inx plug-in.

With each new version, Adobe is blurring the line between design and image manipulation software on its way to creating a single all-in-one design program. It's not there yet, but CS3 is a good start.

Christopher Zammit

Photoshop CS3 allows you to be a little bit more creative with still photos, but allows much more freedom and choice with digital video.



Adobe's Stock Photos CS3 is a good way to keep track of and sort images.



ID

ADOBE INDESIGN CS3 — WHAT'S NEW

Directional feather effect

Customises the feather angle and the amount of feathering on each side of an object.

Bevel and Emboss effect

Add inner highlights and shadows.

Satin effect

Creates a satin-like finish.

Inner Shadow effect

Gives the object a recessed appearance.

Inner Glow and Outer Glow

Add glows that emanate from the inside and outside edges of an object.

Finer transparency controls

Create complex visual effects by applying multiple transparency settings.

Convenient Glyphs panel

Filter and sort glyphs and save glyph sets for sharing and reuse.

Multi-file placing

Import several different files in one step.

Placed InDesign documents

Shorten the layout process and collaborate more effectively by reusing InDesign documents.

Expanded Quick Apply

Access commands, text variables, scripts and styles instantly.

Fast frame-fitting

Set the default fit behaviour of frames and assign fit options to object styles.

Visual Pages panel

Quickly navigate a document and arrange its pages using thumbnail previews.

Nested style looping

Automatically apply a sequence of character styles within a paragraph with one click.

Table and cell styles

Apply styles to a table or to table cells.

E-mail-based

assignments for InCopy workflow
Send stories and graphics as a single assignment package via email.

Export to XHTML

Quickly repurpose InDesign content for the web by exporting to XHTML.

Agate measurement units

Take advantage of agate measurement units.

PS

ADOBE PHOTOSHOP CS3 — WHAT'S NEW

Streamlined Interface

Take advantage of the self-adjusting docks and workspace presets for specialised tasks.

Zoomify report

Export full-resolution images in the Zoomify format so you can display them on the internet.

Adobe Bridge CS3 with stacks and filters

Organise and manage your images with new tools.

Adobe Device Central

Create and view artwork for display on mobile phones and other devices.

Next-generation Camera Raw

Process raw data — at high quality — from more than 150 digital cameras.

Smart Filters

Preserve image data integrity as you enhance your images.

Improved curves

Use the colour-correction presets to make automatic adjustments to curves.

Adjusted cloning and healing with preview overlay

Control multiple clone sources, as well as rotate and scale each clone source.

Expanded 32-bit HDR functionality

Capture bracketed exposures and then combine them into a single 32-bit HDR image.

Quick Selection tool

Make a quick, accurate selection of an irregularly shaped object without having to manually trace the object's edges.

Refine Edge feature

Modify the edge of a selection by expanding or contracting, feathering, or smoothing it using slider controls.

Photomerge with

advanced alignment blending
Get Photoshop's help creating advanced composite images.

Vanishing Point with 3D support

Export 3D information in formats supported by 3D applications.

3D visualisation and texture editing (Photoshop Extended)
Import and edit 3D models.

Motion graphics and video layers (Photoshop Extended)

Edit a video on a frame-by-frame basis.

AI

ADOBE ILLUSTRATOR CS3 — WHAT'S NEW

Live Trace

Automatically turns placed images into vector graphics that are easy to edit, resize and manipulate without distortion.

Live Paint

Lets you paint vector graphics more intuitively by automatically detecting and correcting gaps that previously would have affected how fills and strokes were applied.

Preserve spot-colour rasters and spot-colourised grayscale images

Used when saving to AI, EPS, or PDF files or when exporting to legacy EPS or legacy AI formats.

Apply spot colours

In raster-based effects
Can be used in drop shadows, glows, feathers and blurs.

Colourise an embedded grayscale image

Can be done in either CMYK or RGB document colour spaces.

Offset a stroke on its path Control

Whether a stroke is centered on a path or positioned on the inside or the outside of the path.

Type enhancements

Apply underlining and strikethrough to text using the Character palette.

Workspace management

Select commonly used options from the context-sensitive Control palette, which reduces the number of palettes you need to have open.

Palettes

Arrange palettes and defaults to support a specific workflow or client project, and then save the setup as a named workspace.

New SVG and SWF options

Save rich graphical content in SVG-Tiny format, which is optimised for mobile wireless devices.

Expanded support for Wacom tablets

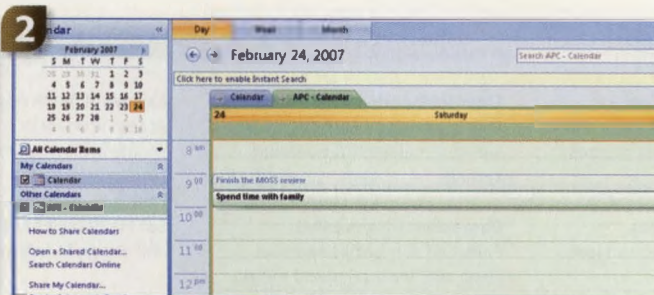
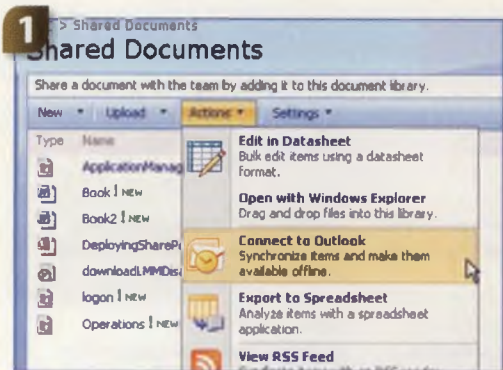
Take advantage of new Wacom tablet features.

Place Photoshop layer comps

You can now control the visibility of layer comps in linked, embedded and opened Photoshop files.

Export Illustrator artwork as SWF (Flash)

More control over mapping layers to animation frames.



The new overlay calendar feature in Outlook 2007, combining a personal calendar with a SharePoint hosted calendar.

The integration between Outlook and SharePoint is a big selling point.

Microsoft Windows SharePoint Services 3.0 and Office SharePoint Server 2007

FIRST LOOK

Collaboration environments are gradually replacing file shares. *Paul Schnackenburg* examines the latest version of SharePoint Server and SharePoint Services, which introduce wiki and blog functions, among other things.

Are version control, check in and out and team sites really better than file shares? It seems the business market thinks so, and Microsoft's SharePoint products are increasingly the dominant platforms for intranets and collaborative publishing.

The just-released new versions are Windows SharePoint Services 3.0 (WSS) and Office SharePoint Server 2007 (MOSS). WSS is a free add-on for Windows Server 2003 that will also be included in Longhorn Server. MOSS 2007 extends WSS and is the successor to SharePoint Portal Server 2003. Both introduce major improvements, managed through a much more unified user interface.

WSS and MOSS are very powerful tools — designed to host everything from personal sites all the way up to multi-server, high-traffic intranet and internet web sites. Add to this the new Business Data Catalogs (BDC) that allows search in SAP, Oracle and Siebel systems, and has the ability to host web-based interfaces. Yet, in smaller environments, MOSS can be hosted on a single server, while for

medium loads a web front end and a back-end SQL Server 2000/2005 setup is enough.

SECURITY IMPROVEMENTS

In earlier versions of MOSS, all menu items and documents were visible if the user had permissions to view that part of a hosted site. When users attempted an action or tried to open a document to which they had no permission, an error message was displayed. This has been replaced with a secure, trimmed UI: only the menu options and documents the user has access to are visible. This works for search results as well.

User authentication has also been improved. Earlier versions of SharePoint were reliant on Active Directory (or local user accounts) to identify users; now, with support for ASP.NET, any compliant authentication provider can be used. Some examples include SQL Server authentication and Windows Live accounts.

The most powerful addition to WSS/MOSS is item level access control — individual documents can now be assigned permissions.

SHAREPOINT IS COLLABORATION

The fact that public folders are being 'de-emphasised' in Exchange 2007 is another indication that SharePoint is the future of (Microsoft) collaboration. ①

Outlook 2007 can view SharePoint libraries and synchronise these for offline access. ② Calendar and task list integration between Outlook 2007 and SharePoint is now two-way. For laptop users this is incredibly powerful, offering almost complete offline access.

Company-branded default PowerPoint slides can be stored in SharePoint and, when you click 'Copy Slide to Presentation', a new presentation is opened using them.

MOSS now supports RSS feeds along with the existing email alert system for notification of changes to items.

Also new are wiki and blog functions in WSS that make it a snap to set up either type on your site. Versioning supports both minor and major versions, and documents can be checked in/out.

On the server side, integration with ISA 2006 offers intelligent load balancing across web front-end

servers, smart URL translation for internal addresses to external domain names, plus SSL termination for deep content inspection.

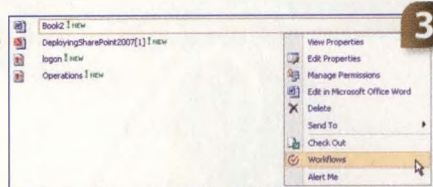
UNIVERSAL TRANSLATOR

In MOSS you don't need a separate

INSIDE INFO

- Examples of WSS templates in action
<http://sharepoint.microsoft.com/sharepoint/templates>
- Download WSS 3.0
www.microsoft.com/technet/windowsserver/sharepoint/download.msp
- MOSS 2007 home with links for downloading the trial
<http://office.microsoft.com/en-us/sharepointserver/FX100492001033.aspx>
- Comparison of the different editions of SharePoint
<http://office.microsoft.com/en-au/sharepointserver/HA101680161033.aspx>

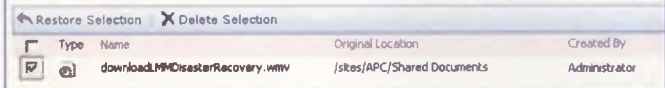
Start a Workflow from a document.



3

Recycle Bin

Use this page to restore items that you have deleted from this site or to empty deleted items. Items that were deleted more than 90 days ago go to the Site Collection Recycle Bin.



4

The saviour — for both users and administrators.

server to host sites in different languages. Language packs change the UI language for individual sites on the same server. MOSS also goes a step further with a new feature called 'Site Variations'. When a particular piece of source content changes (in one language), all target variations are notified — and administrators for those sites can translate the updated content.

MOSS supports internationalised domain names (IDN) for URL and domain names.

ARE YOU IN THE FLOW?

A big new feature in WSS/MOSS is workflow integration. WSS uses Windows Workflow Foundation (a free part of Windows Server 2003) to create web-based workflow applications. ③ These can be initiated manually when a user creates or changes a document.

MOSS adds more workflow functionality via Office 2007 integration and pre-defined workflow 'templates' (Approval, Collect Feedback, Collect Signatures, Disposition Approval, Translation Management, Group Approval). The Enterprise version of MOSS can also use InfoPath forms for workflow.

There are a few different tools for creating workflows; the easiest one is SharePoint Designer 2007, as no installation is required on the

Full control over web parts, CSS styles and master pages for SharePoint.

server. If Workflow designer or Visual Studio is used, an administrator has to allow installation of the workflow code.

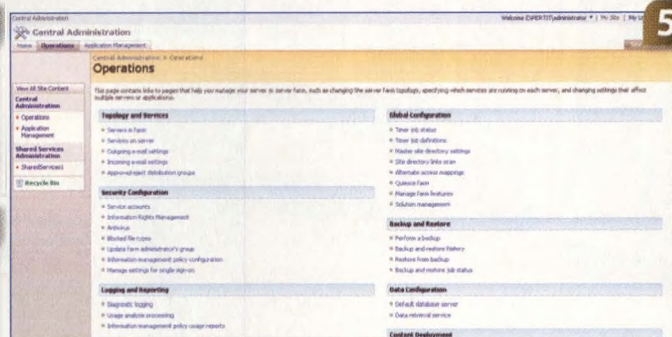
A related feature is Excel Services, which can render and update Excel content in MOSS without clients requiring Excel to be installed.

MANAGEMENT IMPROVEMENTS

Configuration and auditing can now be centrally controlled with policies. Auditing and logging (including audit reports) has also been vastly improved to keep up with legislation in the US. A multi-tiered administrative model makes it easier to delegate responsibilities.

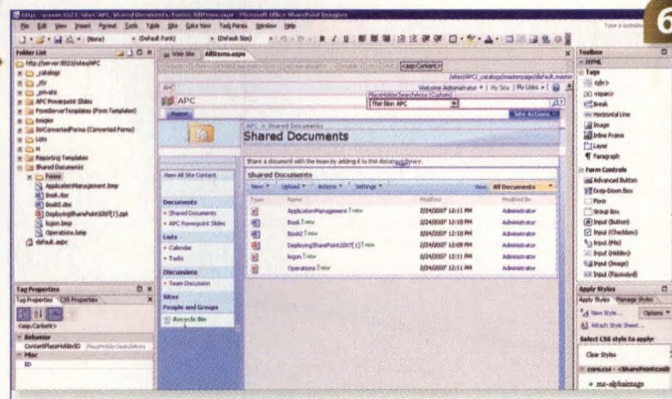
④ The single best feature in WSS/MOSS that users and administrators alike are going to love is the multi-stage, administrator-configurable Recycle Bin. No more clunky SQL database restores to retrieve a single deleted document. Backup has also been improved (including support for Volume Shadow Copy services) and is easily done through the UI.

Servers can now be renamed and the configuration database updated with new URLs and so on. Content can be migrated from an entire site (or selected parts) to another, with different topology, service accounts and database names used.



5

The administrative user interface is logically laid out.



6

Publishing is built in with 'paths' (source and destination for content) and 'jobs' that define schedules for going live. All pages also have schedules so that an entire section can go live at the same time, or expire at a set date.

Also new in WSS/MOSS is 'content types', which is essentially a schema that defines document types. Policies can be attached to individual content types.

⑤ Overall, the UI for administrators is much cleaner and easier to work with.

DESIGNING FOR SHAREPOINT

MOSS inherits from ASP.NET 2.0 the concept of 'master pages', to make branding of every page easy. Page Layouts are templates that control what authors can change.

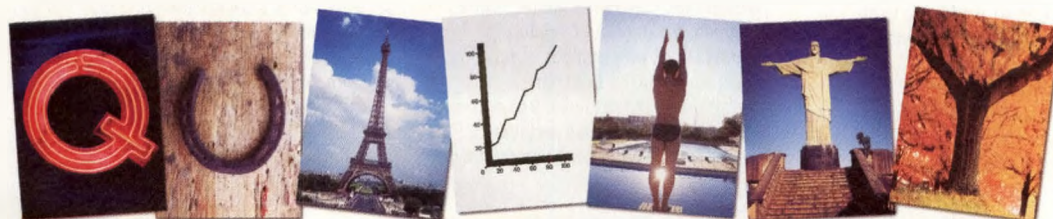
Designing SharePoint sites has always been a bit dodgy, with FrontPage breaking functionality in

some situations. ⑥ The new SharePoint Designer 2007 (a superset of Expression Web designer on last month's APC cover disc) provides a better experience.

Microsoft also offers a host of templates for various types of sites to customise with WSS and MOSS.

MOSS comes in a Standard (US\$4,424) and an Enterprise version (\$57,670 — includes BDC search). If you're primarily using MOSS as an intranet, a CAL is required for each user. If MOSS is hosting an external site primarily used by customers or business partners, the 'internet site' licence is appropriate.

Microsoft often seems to get it right 'third time around', and this time there's no doubt: WSS and MOSS are vastly improved over previous versions. There's no better web-based collaboration environment. **ITIC**



GENUINE EPSON INKS AND PAPER

EPSON
EXCEED YOUR VISION





Internet security suites for Windows Vista

Peter Sbarski rounds up six security suites to see what defences they can offer you (and to see what they let slip through).

Over the past few years, Microsoft has made a lot of noise about trusted computing and Windows Vista. However, the results were a mixed bag. The epitome of Vista's promised Holy Grail of security became the annoying and arguably unnecessary User Account Control (UAC), which most power users — we would guess — quickly turned off. On the bright side, Windows' firewall became a little tougher and Windows Defender was also included.

Arguably, home users still need third party suites to protect themselves. In this Labs Roundup, we've tested six

security suites for Vista that are designed to keep us safe online as well as offline.

This time we concentrated on spyware, adware and phishing protection as the main problems faced by the users. Although we ran these tests under Windows Vista, our results can generally be applied to Windows XP too.

Finally, by the time you read this, Check Point and Grisoft should have their Vista-compatible products, ZoneAlarm and AVG, out on the market. Before handing over your cash, be sure to check them out too. Happy hunting folks!

HOW WE TESTED

To test each security suite, we installed a fresh copy of Windows Vista Ultimate and infected it with the same set of spyware and adware programs. We turned Vista's User Account Control (UAC) off but otherwise left the system in its default state. Each suite was installed after spyware and adware was added to the system to see how it would handle an *a priori* corrupted environment. To make the test more organic, a number of common applications with dubious reputations, such as BSPlayer, RadLight, WeatherBug, WildGames, BearShare and AXDL plug-in were also installed.

To test anti-phishing capabilities,

the latest phishing URLs provided by PhishTank.com were used in conjunction with Internet Explorer 7. The Internet Explorer phishing filter was disabled. Each application was tested on an AMD x2 4400 with 512MB of RAM and an 8GB partition specifically allocated to the test. The operating system and applications were reinstalled before each new security suite was tested. All security suites were updated and ran with default virus and spyware scans. Unless specified otherwise, all recommended settings were accepted and applied. In each test performance, robustness and overall memory consumption was noted.

Norton 360

Norton 360 is an improvement over Norton Internet Security. Not only does it have more features but it is also lighter, faster and slicker than its elder brother. The first surprise was that it took a lot less disk space than a typical Norton product. The second was its average memory consumption: 5,160KB (idle) and 39,980KB (scan). The third was the streamlined interface that made Norton 360 a pleasure to use.

Although 360 became unresponsive the first time we ran it, its performance and stability were good. It quickly checked for viruses and spyware, weak passwords, browser and network security issues. It also cleaned out temporary internet and Windows files as well as IE's history.

Norton's detection rate was

reasonable, but not perfect. It missed a couple of adware programs and labelled one piece of adware as low-risk (and left it in the system). There was seemingly no way to remove it (no right-click) until we realised that an option to remove low-risk threats was tucked away in the advanced virus and spyware protection settings.

Norton's firewall worked reasonably well, although, by default, firewall permission pop-ups were disabled — not necessarily a good thing. The firewall, however, detected most of our applications automatically and granted them the required rights.

Norton 360's anti-phishing protection performed brilliantly. It detected every phishing site we



threw at it. Most of the time it displayed a page warning that the site was dangerous. A couple of times it wasn't sure, so it reported the page as suspicious and advised against using it. Unfortunately, the phishing filter did not work under Firefox (IE only).

The main question is whether current users of Norton Internet Security should upgrade to Norton 360. Although we found Norton 360 to be a better, more refined product, the only major security benefits are the extra performance and web site protection. In general,

It would have been wonderful if Vista had a similar UI.

Norton Internet Security provides the same kind of defence against hackers, viruses, spyware, worms and spam as Norton 360. Apart from the new interface and speedier performance, the only other differences are new features like backup, defrag, web site authentication and encryption. If Norton's malware detection was better, we wouldn't hesitate to recommend it, but, as it stands, there is still room for improvement.

CONTACT	Symantec Australia
ONLINE	www.symantec.com/en/au/
MARKET	Everyone
PRICE	\$129.95

✓ Fast: anti-phishing protection.
VERDICT ★★★★★
✗ Malware detection; firewall tricky.

Windows Live OneCare

Microsoft hasn't done enough with Windows Live OneCare to make it a viable product for the consumer. In comparison to other suites, it feels like a rather poor clone that's haphazardly put together. In fact, Windows Live OneCare feels like a utility that was left out of Vista before it shipped.

To be fair, Live OneCare is relatively usable — it has a reasonable interface

and it's cheaper than Norton 360. Similarly to Norton and McAfee, Live OneCare takes care of the system's security and looks after its performance by the way of defragging, temporary file deletion and performing backups.

Live OneCare detected some — not all — of our malware, but didn't remove it. We had to scan the system twice because we

CONTACT	Microsoft Australia
ONLINE	http://onecare.live.com
MARKET	Everyone
PRICE	\$99.95

✓ Three-PC licence; user interface.
VERDICT ★★★★★
✗ Malware and anti-phishing ability.

weren't sure what had happened. Live OneCare's reporting mechanism was confusing, too. A dialog box informed us that one potentially harmful program was stopped or cleaned. Looking at the details, we saw that the product was WhenU.SaveNow. The action that was taken against it read: 'Quarantine Failed'. We scanned once more and found the same spyware program again. This time we elected to remove it. Unfortunately, even now we can't say with certainty that the system was cleaned out.

Live OneCare doesn't come with any sort of integrated phishing protection. Instead, it uses IE7's phishing filter. Obviously, if you use another browser — tough luck.

Live OneCare has a plain but acceptable interface design.

Sadly IE7's phishing filter worked poorly. It completely missed a number of phishing sites that other suites detected. When it did work, the warning message wasn't entirely obvious: the address bar became red and a little caption saying 'Phishing Website' appeared in the right-hand corner. It was easy to miss it, and, one would imagine, it would be even easier to miss for users with poorer eye-sight.

The rest of the functionality provided by Live OneCare is nothing to write home about. Performance tuning, for example, is nothing more than an automated way to defrag, remove temporary files, back up, update Windows and do a few other things. Live OneCare is a mediocre effort from Microsoft. Wait for the next version to be released before you try it.



McAfee Total Protection 2007

The McAfee web site states that Windows 2000, XP and Vista are supported operating systems for McAfee Total Protection 2007. It should mention, though, that if you try to install the current version of Total Protection 2007 under Vista it will corrupt your system. To avoid corrupting Vista, the user must download and run a patch from <http://au.mcafee.com/vista/>, which will then install Total Protection properly. If, however, you are upgrading from XP to Vista and Total Protection is already installed, everything should be taken care of automatically.

In terms of responsiveness and performance, Total Protection felt similarly slow in both Vista and XP. If you are already low on RAM, there are faster security suites to be found. Total Protection was,

however, quick to find spyware. One was detected before we even ran the first scan.

Total Protection warned that removing certain adware would make some programs inoperable. This is a useful warning. Some security suites like PC-cillin Internet Security 2007 don't make this fact clear enough. Overall, the detection rate was good with Total Protection detecting about 24 different items (including questionable tracking cookies).

Total Protection comes with a utility called Site Advisor which attaches itself to the browser. Site Advisor attempts to protect the user from phishing, fraud and identify theft. It is more advanced than a standard phishing filter, eg. Norton 360, which is a bonus. If Site Advisor doesn't like a site, eg.

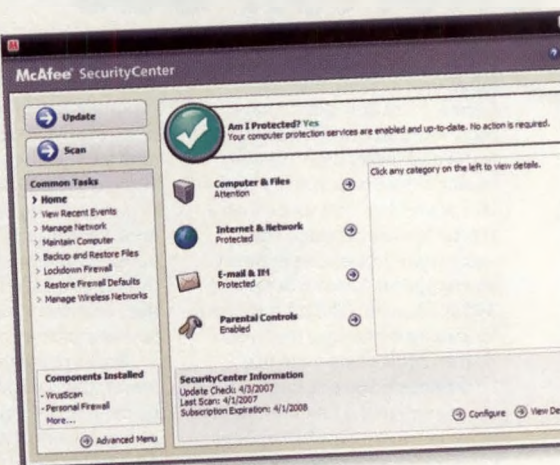
Whether you use Vista or XP, McAfee always looks the same.

<http://bearshare.com>, the user can click on it to find out what the problem is. Phishing protection was reasonable. Only one of our examples was let through. Total Protection also sometimes warned about the same site twice.

McAfee Total Protection suffers from a feature overload. There is virus and spyware protection, performance tuning, spam filtering, wireless network protection, backup and restore, a firewall and other less useful bits. Under Vista

it was by and large stable, but we saw a blue screen once.

This suite has previously gotten a high rating from us, but, like most first-generation, Vista-compatible products, it still has a few bugs. In light of the competition, however, it deserves some commendation.



CONTACT McAfee Australia
ONLINE www.mcafee.com
MARKET Everyone
PRICE \$99.95

Malware & anti-phishing detection.
VERDICT ★★★★★
Memory use; bit slow; a tad buggy.

Kaspersky Internet Security 6.0

The current version of Kaspersky Internet Security will gracefully refuse to install under Vista (take note McAfee). The user instead must download an updated version of Internet Security 6.0 from www.kaspersky.com which is Vista-compatible (at the time of printing 6.0.2.621). The serial number from your boxed version will work with this update.

Kaspersky wasn't too fast to scan the system, but it detected about 15 instances of malware (excluding tracking cookies) and neutralised them all. Interestingly, it found one adware product, but, similarly to Norton 360, didn't remove it. Searching for an answer, we came across protection settings. There we had to enable an option to specify that potentially dangerous software, or riskware, should be considered

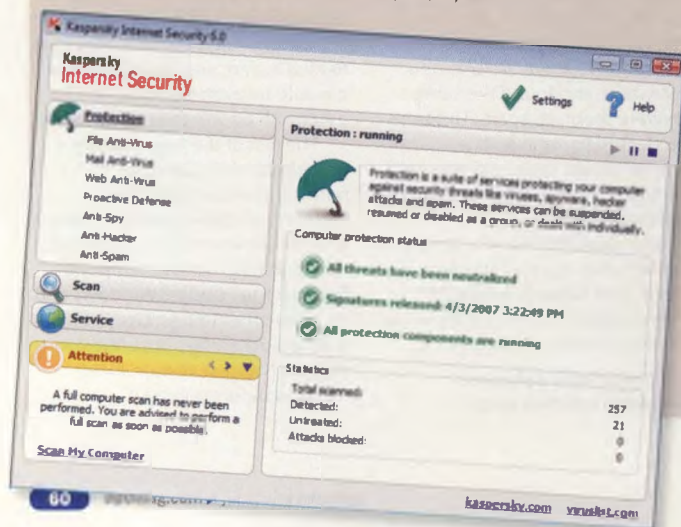
malware and therefore deleted. By default, Kaspersky ignores riskware, but it does warn that some software could be affected if it is removed. Overall, in terms of malware detection, Kaspersky and McAfee were on par.

The product includes virus, spam, web and phishing protection, as well as a good firewall, a mail scanner, dialer blocker, an intrusion detection system and much more. It won't, however, optimise your system or backup files (not necessarily a bad thing). It is also light and responsive, with a good interface to boot. All of this makes Kaspersky a pleasure to use, although not necessarily fast.

Unfortunately, Kaspersky's

anti-phishing performance wasn't up to scratch. It missed a few of our test examples that McAfee, Norton 360 and PC-cillin caught. Sometimes it also showed numerous warnings for the same site. Compared to the overall quality of the suite, Kaspersky's anti-phishing performance was a little disappointing (and surprising). If solid phishing protection is important to you, we would advise to look at PC-cillin, McAfee and Norton instead. The one good thing about Kaspersky's anti-phishing was the unobtrusive but visible dialog box it displayed.

Although Kaspersky has previously been a winner in our tests, this time its phishing performance has been its Achilles heel. We nonetheless recommend downloading the trial and trying it yourself.



Kaspersky Internet Security protects against just about everything.

CONTACT Kaspersky Lab
ONLINE www.kaspersky.com.au
MARKET Everyone
PRICE \$94.16

Malware detection; intuitive.
VERDICT ★★★★★
Average anti-phishing.

BEST TECH



The **Best Value** award is for products which offer a good combination of features for a reasonable price.



The **Best Overall** award is for products we believe are the best, regardless of price.

APC's independent reviewers point to the best technologies in the top-selling product categories each month. We only change products when a better one comes along. What you see here is the best technology available on the market.

Best Tech is edited by William Maher. Contributors to the APC Best Tech guide: Ashton Mills, Nick Race, Tony Sarno, Dan Warne, Chris Zammit and Stephen Withers.

THE BEST GEAR
IN 50 CATEGORIES!
ONLINE AND IN THE
MAGAZINE



DESKTOP PCS – GENERAL USE

Enspire Digital Vitesse XP2

CONTACT Enspire Digital
ONLINE www.enspiredigital.com.au
PRICE \$2,687 (our spec)



We specced this machine on the Enspire site, with the right mix of features for work and play. Under the hood is Intel's flagship Core 2 Duo E6600 (2.4GHz) with 1GB of RAM, a Samsung 19in 8ms screen and GeForce 7600GT graphics card. Classy touches include the Logitech MX3000 Cordless Desktop set and 5.1 speakers.



PC Quest M2 Core

CONTACT PC Quest
ONLINE www.pcquest.com.au
PRICE \$1,510 (our spec)



When it comes to cheap, do-everything machines, there's a lot of rubbish out there from the big brands. Not so with PC Quest. This system has a dual-core Athlon 64 X2 3800+ on AMD's new AM2 platform, plus 1GB of RAM and a 19in LCD. Also, the ATI Radeon x1600 Pro is a capable card for occasional gaming.



DESKTOP PCS – BUSINESS

Dell OptiPlex 745 mini tower

CONTACT Dell
ONLINE www.dell.com.au
PRICE \$1,635.70 (our spec)



With Intel's new Core 2 Duo onboard, this represents the top of the line in a business computing platform. Key features include a Core 2 Duo E6300 (1.8GHz) chip, 1GB DDR2 RAM, a 160GB Serial ATA hard drive, and 3-year next-business-day on-site warranty. Price includes 17in LCD monitor.



Dell Dimension C521

CONTACT Dell
ONLINE www.dell.com.au
PRICE \$1,155 (our spec)



As cheap as anything you'll find with dual-core (though you'll get cheaper with P4), we managed to spec the C521 with an Athlon 64 X2 3800+, 1GB RAM, a 19in LCD and 80GB HDD. The weak point is the integrated graphics: Vista-compliant, but you'll need to turn off the eye candy.



MOTHERBOARDS

ASUS P5N32-E SLI motherboard

CONTACT ASUS
ONLINE www.asus.com.au
PRICE \$379 (P5N32-E SLI); \$349 (SLI)



Motherboards based on Nvidia's 680i chipset are the bees knees for enthusiasts. The P5N32-E SLI includes two 16x PCI Express lanes for Nvidia cards in SLI configuration, support for Core 2 Extreme, Core 2 Duo and Socket 775 processors, automatic overclocking of RAM, and 1,333MHz FSB future processors from Intel.



Foxconn P9657AA-8KS2H

CONTACT Foxconn
ONLINE www.foxconnchannel.com
PRICE \$165



This board only has a single x16 PCI Express slot, so it can't be used for CrossFire or SLI. However, it also has one x1 and one x4 PCI slot ready for the next-generation of PCI-E expansion cards. Combine this with HD audio, five SATA and one eSATA port and you've got top value for your money.



VIDEO CARDS

MSI GeForce 8800 GTS 320MB

CONTACT MSI
ONLINE www.msicomputer.com.au
PRICE \$479



There is a pretty big difference between the GTX and the GTS models on paper, but the performance of the much cheaper GTS is still rock-solid. Testing in F.E.A.R. and Quake 4 had the card singing – the GTS 320MB version never slowed or shuddered, even with the system-killing 16xAA turned on.

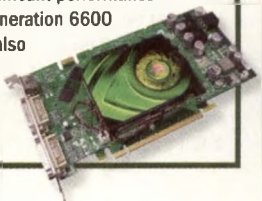


Nvidia GeForce 7600 GT

CONTACT Nvidia
ONLINE www.nvidia.com
PRICE Approx. \$210



Nvidia's mainstream card, the GeForce 7600 GT raises the bar for price compared to performance. With significant performance boosts over the last-generation 6600 GT card, the 7600 GT also comes with support for SLI, allowing performance to spiral even higher.



LCD MONITORS

HP w1907

CONTACT HP
ONLINE www.hp.com.au
PRICE \$549



It's not the 24in Dell behemoth we featured in April's issue, but for most people, this 19in model is probably a better fit. It was our pick of the glossy screens in May's LCD monitor roundup (see page 52), with a bright, crystal-clear screen and less of the darkened corners seen in some rivals.



BenQ FP71G+

CONTACT BenQ
ONLINE www.benq.com.au
PRICE \$329



Proof that good things do come in small packages, this 17in LCD screen manages to remain at a low price point while still delivering an 8ms response time. There is no DVI, but this 1,280 x 1,024 monitor will definitely satisfy most run-of-the-mill computing jobs with ease.



OPTICAL DRIVES – DVD

ASUS DRW-1814BLT DVD writer

CONTACT ASUS
ONLINE www.asus.com.au
PRICE \$79



Finally, a retail SATA optical drive! This is a premium drive, running at 18x DVD±RW writing, 8x DVD±R Double Layer and 48x CD writing. Interestingly, it's only rated to read DVDs at 16x (slower than it can write to them). In the box, you get a couple of blank LightScribe-compatible discs, and Nero 6 OEM.



Pioneer DVR-212D

CONTACT Pioneer
ONLINE www.pioneer.com.au
PRICE \$89



Despite the name, the DVR-212D appears to be identical to the DVR-A12XL in terms of specs and features, including firmware upgradeability – only it's a SATA variant instead of IDE as with the DVR-A12XL. That, and it lacks the extensive Cyberlink software package, which you don't really need. But as it's SATA and can be found for \$89, it gets the Best Value award.



INTERNAL HARD DISKS

Seagate Barracuda 7200.10 750GB

CONTACT Seagate
ONLINE www.seagate.com
PRICE Approx. \$980



This 750GB whopper scored well in our benchmarks and – just think about it – you only need two of these for 1.5TB of storage! It's available in PATA and SATA, but, really – who uses PATA these days?

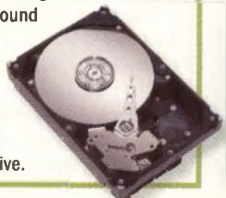


Seagate Barracuda 7200.10 320GB

CONTACT Synnex
ONLINE www.synnex.com.au
PRICE \$225



It's quiet and packs plenty of punch, but be careful in tight enclosures: it's hot. Though the RRP for this drive is \$225, they can be found on the street for less than \$200. The 16MB cache model is fast enough for most uses, but if you're serious about video editing, splurge for a 10,000rpm drive.



EXTERNAL HARD DISKS

LaCie Bigger Disk Extreme 2TB

CONTACT LaCie
ONLINE www.lacie.com/au
PRICE \$1,695



So your friend has been boasting about their 1TB external like it's the bee's silicon knees? Pfft – LaCie's latest release packs 2TB into a single device, tossing in three different interface options of FireWire 400, FireWire 800 and USB 2.0. As far as external drives go, it doesn't get bigger than this. For now anyway.



WD My Book Premium ES 320GB

CONTACT Western Digital
ONLINE www.westerndigital.com
PRICE \$249 (320GB)



The WD My Book products have garnered quite a following. The new Premium ES adds eSATA support to provide greater throughput for external links – up to 300MB/s over USB 2.0's 60MB/s. Sporting some fancily named backup software, the Premium ES is priced well too.



USB ULTRA-PORTABLE

Lexar Jumpdrive Lightning

CONTACT Lexar
ONLINE www.lexar.com.au
PRICE \$79.95 (1GB)



This ultra-quick Lexar functions like any other memory key, but includes a PowerToGo feature – you can install apps to the drive that can be run on any PC. It doesn't make any changes to the host OS and stores files locally on the key, so you can take it all with you when you leave; ideal for students or support staff.



Sandisk Cruzer Micro

CONTACT Sandisk
ONLINE www.sandisk.com
PRICE \$47 (1GB)



Sandisk's Cruzer Micro is top-notch. The simple design includes a retractable USB connector and ships with a lanyard. The key includes the U3 software platform that allows users to install custom apps – just like Lexar's PowerToGo feature. It's a touch slower than its competitor, but it's also \$20 cheaper for the 1GB capacity.



MEDIA ADAPTORS

Zenonic Z500 HD Network DVD

CONTACT Zenonic
ONLINE www.zenonic.com.au
PRICE \$569



If you want to get your digital media from the study to the lounge room, the Z500 can handle anything you throw at it. It's a progressive-scan MPEG4/DVD player with HDCP-compatible HDMI, plus built-in Ethernet and 802.11b/g for streaming internet access and playing music, photos and movies from any PC on your home network.



Mediatek MG-350HD

CONTACT Anyware Computers
ONLINE www.anyware.com.au
PRICE \$399



The Mediatek MG-350HD is one of the simplest ways to get high-definition action into your lounge room (up to 1,080p resolution). Whack a desktop hard drive inside and the Mediatek plays just about any audio, video or image file you care to throw at it — from the drive or via Ethernet or Wi-Fi.



NAS / SMALL BUSINESS

Adaptec Snap Server 210

CONTACT Adaptec
ONLINE www.adaptec.com
PRICE \$2,152 (500GB) inc. software



Unlike big rack-mounted enterprise NAS systems, Adaptec's Snap brand has focused on the smaller end of town. This design has either 500GB or 1TB of networked storage. What sets it apart is the award-winning GuardianOS, giving you features previously reserved for big business.



Adaptec Snap Server 110

CONTACT Adaptec
ONLINE www.adaptec.com
PRICE \$999 (160GB) inc. software



Cheaper than the Snap Server 210, this model gives you a business-class network storage box with a single drive (160GB to 500GB) of space on a Gigabit Ethernet connection. Designed to be fast, it incorporates features like block and file date on the same server, plus integration with Windows, Linux, Unix and Apple.



SERVERS — SMALL BUSINESS

PowerEdge 2900

CONTACT Dell
ONLINE www.dell.com.au
PRICE From \$3,487



This Dell is a beauty. It's dual-socket, dual-core and sports up to two of the new Intel Woodcrest Xeon. The default config features a single Xeon 5140 at 2.33GHz with 1,333MHz FSB, backed by 2GB of DDR2 533 FB DIMMS and an 80GB SATA II hard drive. Dell offers a 3-year on-site warranty on this hugely upgradable server.



HP ProLiant ML110 G3 SMB Bundle

CONTACT HP
ONLINE www.hp.com.au
PRICE \$1,499



Not a real powerhouse, but the price can't be beaten. This unit is a single CPU Pentium 4 3.0GHz with 1GB of RAM and two 80GB hard disk drives. Though it won't break any speed records, it will suit a small business's needs. The server is bundled with Microsoft Small Business Server 2003 Standard Edition.



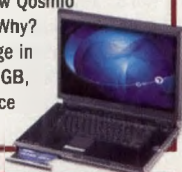
NOTEBOOKS — MEDIA CENTRE

Toshiba Qosmio G30

CONTACT Toshiba
ONLINE www.isd.toshiba.com.au
PRICE \$5,499



Toshiba and Sony have been battling it out for a while now, and now the Qosmio and Vaio VGN-AR behemoths have been updated. Based on the specs, we can't go past the new Qosmio G30 for sheer outright luxury. Why? The G30 now has the advantage in a few key areas, including 320GB, 2GB of RAM and Nvidia GeForce Go 7900.



Acer Aspire 9425WSMi

CONTACT Acer
ONLINE www.acer.com.au
PRICE \$2,699



This Acer doesn't have a TV tuner, but it's cheaper than the ASUS it replaces, and comes with 2GB RAM. It's an ideal Vista notebook, with a 17in wide-screen, Core 2 Duo, plenty under the hood and a decent battery life. Graphics are powered by an Nvidia nForce Go 7300 (using 236MB TurboCache, not discrete graphics).



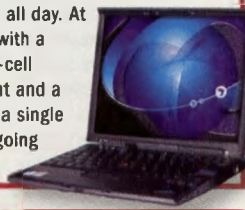
NOTEBOOKS — BUSINESS

Lenovo ThinkPad X60

CONTACT Lenovo
ONLINE www.lenovo.com.au
PRICE From \$2,949



Business is all about portability — after all, there's no point having a notebook if you're hopping between power points all day. At 1.67kg and shipping with a better than average 8-cell battery, the X60's eight and a half hour run-time on a single charge will keep you going all day long.

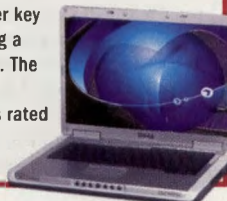


Dell Inspiron 6400

CONTACT Dell
ONLINE www.dell.com.au
PRICE From \$1,329



It's impressive seeing Intel's Core Duo platform in a mid-sized package under \$1,500. Dell hasn't skimped heavily on other key features either, including a 15.4in wide-screen LCD. The 6400 will play and burn DVDs, and battery life is rated for three hours. Weight starts at 2.8kg.



NOTEBOOKS — ULTRAPORTABLE

Toshiba Libretto

CONTACT Toshiba
ONLINE www.isd.toshiba.com.au
PRICE From \$3,499



You had better make sure to look closely when shopping for a notebook or you might miss this one. At just 7.2in, the display is tiny (and the keyboard matches). Don't be fooled by the chassis though, there's plenty of grunt inside (and you can throw it into your backpack with room to spare).



Fujitsu LifeBook P7230

CONTACT Fujitsu
ONLINE www.fujitsu.com.au
PRICE \$2,999



A better buy than the \$3,699 Sony VGNTX27GPT it replaces, this 1.5kg unit has an 80GB drive (vs 60GB for the Vaio). Graphics are Intel GMA 950 vs 900 for the Vaio. You're getting a Core Solo 1.2GHz chip vs Pentium M for the Vaio. Our tests show you'll get around five hours on batteries, and there's an inbuilt optical drive.



SMARTPHONES

Blackberry 8707G

- CONTACT Optus
 • ONLINE www.optus.com.au
 • PRICE \$999 outright (or plans)



We like the new 8800, but, for us, the improved interface and screen don't outweigh the lack of 3G and the cramped keyboard. We're sticking with the 8707G, though the 8800 and Samsung's BlackJack are viable alternatives. We like the 8707G's big screen, fine-tuned keyboard 3G wireless and email service.



UPDATED

Nokia E61

- CONTACT Nokia
 • ONLINE www.nokia.com.au
 • PRICE \$749



It's hard to fault Nokia's 3G "BlackBerry Killer": it has the comfortable BlackBerry form factor along with a QWERTY keyboard and fits comfortably in your pocket — plus, you can take your pick of push email service. There are two other killer features: inbuilt Wi-Fi and Nokia's new web browser.



PRINTERS — HOME

Canon PIXMA iP5300 Bubble Jet

- CONTACT Canon
 • ONLINE www.canon.com.au
 • PRICE \$249



This is the perfect all-rounder for the home. It prints high-quality photos and churns through mono text documents at speeds of up to 31ppm, with quality approaching that of a laser. It can also print directly to CDs and DVDs. The IP5300 will deal with school projects, digital photos, documents, anything!



Epson Stylus C79

- CONTACT Epson
 • ONLINE www.epson.com.au
 • PRICE \$89



This is a cheap and cheerful printer that still delivers good results. With its four separate ink cartridges and extra-fine printing, it marries good print and photo quality with print speeds of up to 22ppm (black text) and 12ppm (colour). Be aware that your main ongoing cost will be the ink.



PRINTERS — SMALL BUSINESS

OKI C3400 LED Laser

- CONTACT OKI
 • ONLINE www.oki.com.au
 • PRICE \$878



Essentially a high-performance colour laser for just over \$800. The OKI C3400 surpassed all the other sub-\$1,000 lasers in our last Labs Challenge in print speed and quality because it uses slightly different LED laser technology. Consumable costs are slightly higher because the toner cartridges only do 1,000 pages, but it's a top performer.



Lexmark E120n

- CONTACT Lexmark
 • ONLINE www.lexmark.com.au
 • PRICE \$188



The outstanding value of this package sent the APC office into raptures. The E120n is a 20ppm mono laser printer, with an Ethernet print server built in, for only \$188. Connect it to your ADSL modem/router and you can print wirelessly from anywhere in the house. Cartridges are not expensive either.



MULTIFUNCTION — HOME

Canon Pixma MP830

- CONTACT Canon
 • ONLINE www.canon.com.au
 • PRICE \$549



The MP780's successor, the MP830 soundly beats the competition. It can print photo-lab-quality 4 x 6in home snaps and has all the gear needed by a home office, such as a copier, scanner and G3 fax machine (together with an automatic 35-page document feeder and duplexing ability).



MULTIFUNCTION — BUSINESS

EPSON Aculaser CX11NF

- CONTACT Epson
 • ONLINE www.epson.com.au
 • PRICE \$1,499



This colour laser multifunction printer won three of the six tests thrown at several MFPs in APC's Labs Challenge. Has good copy and scan speed, and does a great job with plain paper, where its fine detail and accurate colour impressed the judges. It can really replace your office printer, copier and fax machine.



Lexmark X5470

- CONTACT Lexmark
 • ONLINE www.lexmark.com.au
 • PRICE \$249



This Lexmark is probably the first attempt to create a multifunction printer that actually looks stylish. On top of that, the machine also performs well, with print speeds up to 25ppm black and 18ppm colour, a 10-sheet automatic document feeder, plus PC-free photo, fax and copy capabilities.



Brother MFC-8860DN

- CONTACT Brother
 • ONLINE www.brother.com.au
 • PRICE \$1,199



A mono (rather than colour) laser, this still has all the components to make it a powerful office or small department performer — such as a 28ppm network laser printer, a copier and a scanner with built-in duplexing, as well as LDAP capability (for accessing directory services). A great all-rounder for the price.



ADSL2+ MODEM/ROUTERS

Dynalink RTA1025W

- CONTACT Dynalink
 • ONLINE www.dynalink.com.au
 • PRICE \$179



This modem is a bargain at \$179. It performed well in our ADSL2+ and wireless tests and was also a strong performer in Annex M tests. The only area for improvement is long-range wireless, where the 1025W only managed 800Kbit/s, but this won't be a significant concern for most people.



Dynalink RTA1046VW

- CONTACT Dynalink
 • ONLINE www.dynalink.com.au
 • PRICE \$279



Performance is nearly as good as the 1025W, but for your extra \$100 you get two inbuilt VoIP ports for you to connect standard phones to and make two calls at the same time. And if you want the fastest possible modem at 1KM, this is it: 19.85Mbit/s.



WIRELESS APs & ROUTERS

Linksys Wireless-N WRT300N

.. CONTACT Linksys
.. ONLINE www.linksys.com.au
.. PRICE \$279.95



We're still not overly convinced that Draft N devices are the best devices in the long term, but if you want more speed for now, at least it gives you a chance of compatibility between brands and some hope of a firmware upgrade further down the track. The WRT300N has the best range among the Draft N routers we've tested so far.



TP-Link TL-WR541G

.. CONTACT Anyware
.. ONLINE www.anyware.com.au
.. PRICE \$75



In our tests the TL-WR541G delivered solid connections at the same range as routers costing much more. It has the usual four-port 10/100 Ethernet switch plus regular features such as a (relatively simple) firewall, access controls, WPA2 authentication, DHCP and port triggering.



VOIP ADAPTORS

Netcomm V300

.. CONTACT NetComm
.. ONLINE www.netcomm.com.au
.. PRICE \$199



Low upstream speeds on most broadband connections mean QoS support makes a big difference to how you sound during a VoIP call. In APC's testing, the V300 delivered good voice quality with minimum impact on data traffic. It also lets you use one handset for VoIP and PSTN calls.



Netcomm V100

.. CONTACT NetComm
.. ONLINE www.netcomm.com.au
.. PRICE \$128



Connect the V100 to a power point, your network and a handset, and you're in business. Available as a generic model or preconfigured for certain VoIP providers, which makes it as simple as it gets. Some people prefer a box that allows more dithering around with configurations, but we're attracted to the simplicity.



GPS DEVICES

Garmin Nuvi 660

.. CONTACT GME
.. ONLINE www.gme.net.au
.. PRICE \$1,199



As a sat-nav, the Nuvi 660 is the cream of the crop. Stellar 4.3in wide-screen, large buttons and a user-friendly interface make it a breeze to use, and the main navigation screen is clear and uncluttered. Acquiring a GPS signal is speedy thanks to the flip-up antenna, and correcting wrong turns is also snappy.



ASUS S102 PND

.. CONTACT ASUS
.. ONLINE www.asus.com.au
.. PRICE \$549



The ASUS isn't perfect, our tests found it struggled to reroute quickly if we took a wrong turn. Still, we found it was super quick to acquire its initial satellite fix and calculate the initial route. The voice prompts are very helpful as well. You get 2D, 3D and night mode, and the maps are easy to follow, if basic.



DIGITAL STILL CAMERAS

Canon IXUS 800IS

.. CONTACT Canon
.. ONLINE www.canon.com.au
.. PRICE \$649



The IS in this IXUS is for image stabilisation, but the rest of this package is really hard to beat too, with a great range of shooting modes and image settings. The Canon 6MP CCD delivers superb imaging quality. A 4x optical zoom is excellent at this price.



DIGITAL VIDEO CAMERAS

Panasonic AG-HVX202EN

.. CONTACT Panasonic
.. ONLINE www.panasonic.com.au
.. PRICE \$9,900



The first of the next-generation pro-grade cameras (and inside \$10K). Record in DV or various DVCPR0 formats, with support for 720p and 1080i HD. With support for DV tape and the new P2 flash media format, as well as pro audio features and new lensing technology, this is nova hot right now.



PROJECTORS

Optoma HD72

.. CONTACT Amber Technology
.. ONLINE www.ambertech.com.au
.. PRICE \$4,750



Optoma's outstanding DLP-based projector offers full 720p HD resolution for less than \$5,000. The 3.1kg unit produces a clear, consistent image with controls to adjust brightness, contrast, image shift and keystone, through dedicated buttons on the remote control. This helps the viewer adjust the image to match each movie.



Canon PowerShot A450

.. CONTACT Canon
.. ONLINE www.canon.com.au
.. PRICE \$199



This camera delivers all the power of Canon's DiGIC II image processor at a seriously good price. 5MP, 3.2x optical zoom, movie mode, one-touch download/print and a 2in LCD. No fancy shooting modes, but that makes it even better for anyone who just wants to point and click.



Hitachi Hybrid DZ-HS301

.. CONTACT Hitachi
.. ONLINE <http://aus.hitachi.com.au/>
.. PRICE \$1,449



This is a DVD/HDD combo cam. Hitachi's new hybrid gives you more control over video quality and greater recording times, with up to three hours at DVD quality and six at "standard". You also get in-camera editing before you output to disc, making it perfect for those fearful of editing on a PC.



Dell 1800MP

.. CONTACT Dell
.. ONLINE www.dell.com.au
.. PRICE \$1,398.10



Meet the Dell 1800MP, a DLP machine with XGA resolution and brightness of 2,100 lumens. Its 1,024 x 768 resolution and contrast ratio of 2,000:1 are generally found on higher-priced projectors. Downside? Slightly louder fan (36db) and butt-ugly design, but who cares when it comes at this great price?



TV TUNERS

Compro VideoMate T750

CONTACT Anyware
ONLINE www.anyware.com.au
PRICE \$149



With pockets of poor digital reception, we're still inclined towards combo analogue/digital tuners. The T750 provides digital and analogue, composite/S-Video capture, FM radio tuner (with MP3, WAV and WMA recording), remote control and Compro's capable software. We especially like its ability to power up and shut down by remote or before/after recording.



Compro VideoMate U500

CONTACT Anyware
ONLINE www.anyware.com.au
PRICE \$99



The Compro VideoMate U500 is a USB dongle, so you can use it with desktops or notebooks (but you may need a better antenna than the one included in order to receive all channels). Scheduled recording is easy enough to set up, plus it's possible to record directly to a DVD or an ISO.



HD TVs

Sony Bravia KDL40X2000

CONTACT Sony
ONLINE www.sony.com.au
PRICE \$5,499



The Bravia is set apart from the competition by its signature styling, featuring a "floating glass" design — this screen looks expensive, and it is. This is full HD resolution of 1,920 x 1,080, unlike some cheaper value screens (see Acer's value range). For the price, you're also getting an integrated HD digital tuner and 2 HDMI inputs.

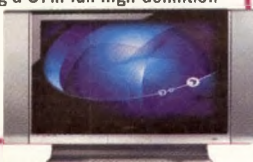


Acer AT3705-DTV

CONTACT Acer
ONLINE www.acer.com.au
PRICE \$2,899



Sure, this high-definition television isn't a traditional audio-visual brand, but Acer are definitely good value for money. For less than \$3,000 you're getting a 37in full high-definition resolution (1,920 x 1,080) LCD screen including analogue and digital TV tuners.



PERSONAL VIDEO RECORDERS

Topfield TF6000PVRt

CONTACT Topfield
ONLINE www.topfield.com.au
PRICE \$1,249



The addition of Wi-Fi provides wireless downloads of electronic program guides from IceTV, allowing you to record TV shows by name rather than timeslot. This Topfield has dual digital tuners and a 200GB hard drive (was 160GB). It's also now easier to copy files off the unit for playback on your PC.



Foxtel iQ

CONTACT Foxtel
ONLINE www.foxtel.com.au
PRICE \$14.95/mth



Admittedly, the 160GB Foxtel iQ sits awkwardly in the category of PVRs, because it's inextricably tied to Foxtel's Pay TV service. But if you do happen to be a Foxtel subscriber, the 160GB iQ is absolutely worth the money. Foxtel has removed the upfront fee, so it's now just \$14.95 a month.



PORTABLE MUSIC PLAYERS

iPod 80GB

CONTACT Apple
ONLINE www.apple.com.au
PRICE \$499



Now this is getting really mental. Truly an insane amount of storage (20,000 songs), which is enough to knock Creative's Zen Vision: off the top of our list. The screen is now brighter and gives up to 20 hours of battery life. It's not cheap, but yet again, Apple's iPod is the best.



iPod shuffle 1GB

CONTACT Apple
ONLINE www.apple.com.au
PRICE \$119



We're not turning into iPod fanboys, but for RRP value we still can't go past the shuffle, which has had a design overhaul and a price cut. It's now so small that fashion models must use their fingertips to hold it in press photos. 1GB of memory gives you up to 240 songs.



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Labor promises \$4.7 billion broadband network

Vote 1 Labor if you want a fibre-optic broadband network, the political party says.

The Labor Party says it will build a fibre-based broadband network if elected, forcing the government into hasty talks to rekindle relations with Telstra in the hope of finding a solution to the broadband standoff before the election.

The government has had locked horns with Telstra since the telco giant walked away from talks with the competition regulator in August last year, saying it couldn't make the 27% profit it wanted on its investment if it built a fibre network under current competition laws. Now, the communication minister's office is talking to Telstra again, with Senator Helen Coonan saying she's looking at whether competition laws need to be modified to allow the proposal to go ahead. But Telstra's biggest competitor, Optus, says it will sue the government if it enters into a backroom deal with Telstra that may have anti-competitive effects on the industry.

Telstra chairman Donald

McGauchie said only Telstra was capable of building a broadband network. "Realistically and pragmatically, despite all the noise from the G9, the T4 and maybe next



week even R2-D2, only Telstra has the scale, capability and commitment to this country to make this multi-billion-dollar investment," he said.

Labor has promised that, if elected, it will build a network that will deliver 12Mbit/s to 98% of Australia's population, which will cost around \$4.7 billion (50% government funded and 50% private industry funded). The plan is not without detractors, though: chief executive of PIPE Networks, a major supplier of fibre-optic backhaul around Australia, says his conservative estimate of the cost brings it closer to \$15-16 billion.

Voting day may well prove whether the public prefers Labor's approach of proposing a network with fair and open access to competitors, or Telstra's approach of spending millions of dollars fighting legal regulations to ensure it can make the profit it wants.

Dan Warne

in brief

TELL THE TRUTH, TELSTRA — SAY COMPETITORS

Tired of Telstra peddling self-serving political rhetoric on its corporate blog site, eleven of the company's competitors have set up their own site, 'Tell The Truth, Telstra' (www.tellthetruthtelstra.com.au). The companies have made a joint complaint to the ACCC asking it to investigate whether Telstra has breached false advertising laws with its claims about broadband. The Tell The Truth site exposes Telstra's top myths and explains why competition between carriers is better for consumers.



IINET REMOVES BUNDLING

ADSL2+ ISP iiNet has removed the requirement for customers to switch their phone line over to them in order to get full ADSL2+ speeds. People who prefer to stick with their own telco can now join iiNet's ADSL2+ from \$39.95/mth, which includes 1GB peak + 1GB off-peak use.

INTERNODE TOPS \$100 MILLION

Although Internode is privately owned by Simon Hackett, the company has released financial figures to demonstrate its success against competitors. The company says it now has over 100,000 customers and is making \$100 million per year in revenue.

your monthly broadband guide

APC is proud to partner with the independent broadband price-monitoring service Broadband Choice (broadbandchoice.com.au) to bring you the best ADSL and cable deals.

The comparison table on the following pages focuses on internet service providers that best serve the majority of APC readers' needs — those that have national coverage (though we have included some ISPs that provide higher than 2Mbit/s speed services in limited areas).

Only those meeting at least three of our four plan selection criteria are listed:

Budget plan: cheapest deal under \$35/month.

Light plan: cheapest deal under \$60/month, with at least 512Kbit/s speed and 1GB data.

Family plan: largest download allowance under \$80/month, at least 512Kbit/s and 10GB data.

High-speed: cheapest 1.5Mbit/s plan under \$100/month, with 10GB data minimum.

If an ISP has "unlimited downloads" but speed is throttled after reaching a certain limit, the portion in which you can get full-speed downloads is listed as its limit.

APC has picked the lowest price for a contract period of six months or less for broadband installation. Otherwise, the lowest-priced option was selected.

The installation price doesn't include a modem because you may find you'll get better value by buying one separately.

Can't find your provider in our list? That's because some of the largest ISPs, and many smaller ones, didn't meet the selection criteria. There may be ISPs we didn't list that will provide better deals (but which only service your local area or state).

ISPs enter their own information into the Broadband Choice database. ISPs can contact bc@whirlpool.net.au for more details on how to become part of the database.

Data for our table was extracted from the Broadband Choice database on 21 April 2007.



Name	Online	Budget plan (under \$35)	Light plan (under \$60, at least 512Kb/s, minimum 1GB data limit)	Family plan (under \$80, at least 512Kb/s, minimum 10GB data limit)	High-speed plan (under \$100, at least 1.5Mb/s, minimum 10GB data limit)	National	Spam filtering	Setup fee and contract length	Rapid transfer
Super-fast broadband ISPs (faster than 1.5Mb/s)									
Comcon ADSL2+	www.comcen.com.au	\$29.95† 1GB+ 24Mb/s	\$29.95† 1GB+ 24Mb/s	\$69.95† 40GB 24Mb/s	\$59.95† 20GB 24Mb/s	✗	✓	\$100 12mths	✗
Dodo ADSL2+	www.dodo.com.au	\$29.90† 1GB+ 24Mb/s	\$29.90† 1GB+ 24Mb/s	\$59.90† 20GB+ 24Mb/s	\$49.90† 10GB+ 24Mb/s	✓	✓	\$1.95	✗
Green Tree Frog ADSL 2+ Phone	www.greentreefrog.net.au	\$29.95† 2GB 24Mb/s	\$29.95† 2GB 24Mb/s	\$66† 20GB 24Mb/s	\$66† 20GB 24Mb/s	✗	✓	\$165 12mths	✗
iNet ADSL2+ (24Mbit)	www.inet.net.au	\$29.95† 500MB+ 24Mb/s	\$39.95† 2GB+ 24Mb/s	\$69.95† 20GB+ 24Mb/s	\$59.95† 10GB+ 24Mb/s	✗	✓	\$79.95 6mths	✗
Internode Extreme ADSL2+	www.internode.on.net	N/A	\$59.95 20GB 24Mb/s	\$79.95 40GB 24Mb/s	\$59.95 20GB 24Mb/s	✗	✓	\$129 6mths	✗
Koala ADSL 2+	www.koalatelecom.com.au	\$34.95† 500MB 24Mb/s	\$44.95† 5GB 24Mb/s	\$74.95† 50GB 24Mb/s	\$49.95† 10GB 24Mb/s	✓	✓	\$149.95 6mths	✗
Letsgo Go ADSL2+ 24Mbit	www.letsgo.com.au	N/A	\$39.95† 60GB 24Mb/s	\$39.95† 60GB 24Mb/s	\$39.95† 60GB 24Mb/s	✗	✓	\$99 12mths	✗
Matilda Internet ADSL2+	www.matilda.net.au	N/A	\$59.95† 1GB 24Mb/s	\$79.95† 20GB+ 24Mb/s	\$69.95† 10GB+ 24Mb/s	✓	✓	\$180 1mth	✗
Netspace Home ADSL2+	www.netspace.net.au	N/A	\$39† 5GB+ 24Mb/s	\$69† 20GB+ 24Mb/s	\$49† 10GB+ 24Mb/s	✗	✓	\$99 6mths	✗
Netspace SOHO ADSL2+	www.netspace.net.au	N/A	\$49.95† 5GB 24Mb/s	\$79.95† 20GB 24Mb/s	\$59.95† 10GB 24Mb/s	✗	✓	\$99 6mths	✗
OptusNet Cable	http://broadbandsales.optusnet.com.au	\$29.95† 300MB+ 9.10Mb/s	\$39.95† 2GB+ 9.10Mb/s	\$69.95† 20GB+ 9.10Mb/s	\$69.95† 20GB+ 9.10Mb/s	✗	✓	\$89 12mths	✗
OptusNet DSL Direct	http://broadbandsales.optusnet.com.au	\$29.95† 300MB+ 24Mb/s	\$39.95† 2GB+ 24Mb/s	\$69.95† 20GB+ 24Mb/s	\$69.95† 20GB+ 24Mb/s	✗	✓	\$89 12mths	✗
Primus up to 800Kbps	www.primus.com.au	\$29.95† 1GB 8Mb/s	\$29.95† 1GB 8Mb/s	\$69.95† 20GB 8Mb/s	\$59.95† 10GB 8Mb/s	✗	✓	\$118 1mth	✓
Spin ADSL2+	www.spin.net.au	\$29.95† 1GB+ 24Mb/s	\$29.95† 1GB+ 24Mb/s	\$69.95† 40GB 24Mb/s	\$59.95† 20GB 24Mb/s	✗	✓	\$100 12mths	✗
Telstra BigPond Cable	www.bigpond.com	\$29.95* 200MB+ 7.8125Mb/s	\$59.95† 10GB+ 7.80Mb/s	\$59.95† 10GB+ 7.80Mb/s	\$59.95† 10GB+ 7.80Mb/s	✗	✓	\$189 12mths#	✗
TPG Residential ADSL2+	www.tpg.com.au	\$29.99* 600MB 24Mb/s	\$39.99 3GB 24Mb/s	\$59.99 30GB 24Mb/s	\$49.99 18GB 24Mb/s	✗	✓	\$59.95 12mths	✗
Westnet Broadband2+	www.westnet.com.au	\$29.95† 500MB 24Mb/s	\$39.95† 2GB+ 24Mb/s	\$69.95† 10GB+ 24Mb/s	\$69.95† 10GB+ 24Mb/s	✗	✓	\$139 12mths	✗
Regular broadband ISPs (1.5Mb/s or less)									
.Netcall ADSL (Bundled)	www.netcall.com.au	\$24.90† 768MB+ 256Kb/s	\$34.90† 10GB+ 512Kb/s	\$74.90† 48GB+ 1.5Mb/s	\$44.90† 15GB+ 1.5Mb/s	✓	✓	\$145 12mths	✓
.Netcall ADSL (Unbundled)	www.netcall.com.au	\$29.90* 768MB+ 256Kb/s	\$39.90* 10GB+ 512Kb/s	\$79.90* 48GB+ 1.5Mb/s	\$49.90* 15GB+ 1.5Mb/s	✓	✓	\$110 12mths	✓
aaNet ADSL (Bundled)	www.aanet.com.au	\$24.90† 768MB+ 256Kb/s	\$34.90† 10GB+ 512Kb/s	\$74.90† 48GB+ 1.5Mb/s	\$44.90† 15GB+ 1.5Mb/s	✓	✓	\$145 12mths	✓
aaNet ADSL (Unbundled)	www.aanet.com.au	\$29.90* 768MB+ 256Kb/s	\$39.90* 10GB+ 512Kb/s	\$79.90* 48GB+ 1.5Mb/s	\$49.90* 15GB+ 1.5Mb/s	✓	✓	\$145 12mths	✓
AAPT ADSL	www.aapt.com.au	\$29† 500MB 256Kb/s	\$39† 12GB 512Kb/s	\$49† 15GB 1.5Mb/s	\$49† 15GB 1.5Mb/s	✓	✓	\$0 1mth	✓
Accsoft Freeway ADSL	www.onmyweb.net	N/A	\$52.95 15GB 512Kb/s	\$75.95 15GB 512Kb/s	\$98.95 10GB 1.5Mb/s	✓	✓	\$132 6mths	✓
Aspark ADSL	www.aspark.com.au	N/A	\$53.95† 25GB 512Kb/s	\$53.95† 25GB 512Kb/s	\$99.95† 35GB 1.5Mb/s	✓	✓	\$110 1mth	✓
AuNix Broadband	www.aunix.com.au	\$24.95* 200MB 256Kb/s	\$39.95† 25GB 512Kb/s	\$74.95† 35GB 1.5Mb/s	\$74.95† 35GB 1.5Mb/s	✓	✓	\$89 6mths	✓
Aussiewide Residential ADSL	www.aussiewide.com	N/A	\$59.95 30GB 512Kb/s	\$59.95 30GB 512Kb/s	\$99 30GB 1.5Mb/s	✓	✓	\$110 6mths	✓
Australia On Line ADSL	www.australiaonline.net.au	\$16.95* 200MB 256Kb/s	\$39.95 2GB 512Kb/s	\$54.95 No limit 512Kb/s	\$94.95 No limit 1.5Mb/s	✓	✓	\$99 6mths	✓
Australis Internet ADSL	www.australis.net	\$24.95* 200MB 256Kb/s	\$49.95 5GB 512Kb/s	\$54.95 30GB+ 512Kb/s	\$59.95 30GB+ 1.5Mb/s	✓	✓	\$139 1mth	✓
B Digital ADSL	www.bysoul.com.au	\$34.95† 5GB 256Kb/s	\$44.95† 5GB 512Kb/s	\$64.95† 10GB 1.5Mb/s	\$64.95† 10GB 1.5Mb/s	✓	✓	\$119 6mths	✓
Beagle Internet ADSL	www.beagle.com.au	\$19.95* 200MB 256Kb/s	\$45.95 5GB 512Kb/s	\$57.95 30GB 512Kb/s	N/A	✓	✓	\$157 1mth	✓
BIT.net	www.bit.net.au	\$19.95† 2GB 256Kb/s	\$29.95† 2GB 512Kb/s	\$69.95† 40GB 512Kb/s	\$59.95† 10GB 1.5Mb/s	✓	✓	\$132 6mths	✓
BKB Internet Home ADSL	www.bkb.net.au	N/A	\$49.95 1GB+ 512Kb/s	\$64.95 10GB+ 512Kb/s	\$89.95 10GB+ 1.5Mb/s	✓	✓	\$139 6mths	✓
Blackstump ADSL	www.blackstump.net.au	\$19.95† 200MB 256Kb/s	\$44.95† 5GB 512Kb/s	\$55.95† No limit 512Kb/s	\$72.45† 10GB 1.5Mb/s	✓	✓	\$108 6mths	✓
Bluemaxx ADSL	www.bluemaxx.net.au	\$24.95* 200MB 256Kb/s	\$54.95 5GB 512Kb/s	\$74.95 30GB 1.5Mb/s	\$84.95 10GB 1.5Mb/s	✓	✓	\$105 12mths	✓
BBi Flat Rate DSL	www.brownbear.net.au	\$32.95 2GB 256Kb/s	\$39.95 2GB 512Kb/s	\$74.95 60GB 512Kb/s	\$64.95 15GB 1.5Mb/s	✓	✓	\$119 6mths	✓
BBi Excess DSL	www.brownbear.net.au	\$32.95* 2GB 256Kb/s	\$39.95* 2GB 512Kb/s	\$74.95* 60GB 512Kb/s	\$64.95* 15GB 1.5Mb/s	✓	✓	\$119 6mths	✓
Brown Bear DSL/Phone	www.brownbear.net.au	\$19.95† 1GB 256Kb/s	\$29.95† 1GB 512Kb/s	\$69.95† 60GB 512Kb/s	\$59.95† 15GB 1.5Mb/s	✓	✓	\$119 6mths	✓
Bullet ADSL	www.bullet.net.au	\$34.95* 500MB 256Kb/s	\$49.95* 5GB 512Kb/s	\$69.95* 25GB 512Kb/s	N/A	✓	✓	\$150 12mths	✓
Central Coast Internet ADSL	www.cci.net.au	\$34.95* 500MB 256Kb/s	\$54.95* 1GB 512Kb/s	\$64.95* 10GB 512Kb/s	N/A	✓	✓	\$132 6mths	✓
Charlot ADSL	www.charlot.net.au	\$29.95* 500MB 256Kb/s	\$39.95 2GB 512Kb/s	\$59.95 40GB 512Kb/s	\$69.95 25GB 1.5Mb/s	✓	✓	\$110 6mths	✓
Comcen Internet ADSL	www.comcen.com.au	\$19.95† 300MB 256Kb/s	\$29.95† 2GB+ 512Kb/s	\$59.95† No limit 512Kb/s	\$59.95† 25GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Comstech Systems ADSL	www.comstech.com.au	\$33.95 500MB 256Kb/s	\$46.50 3GB 512Kb/s	\$72.50 50GB 512Kb/s	\$61.95† 10GB 24Mb/s	✓	✓	\$133.95 6mths	✓
Concept Networks ADSL	www.conceptual.net.au	\$29.95* 500MB 256Kb/s	\$39.95* 1GB 512Kb/s	\$69.95 30GB 512Kb/s	\$69.95* 15GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Connexus Home ADSL	www.connexus.net.au	\$27.95* 200MB+ 256Kb/s	N/A	\$64.95 12GB+ 512Kb/s	\$79.95 12GB+ 1.5Mb/s	✓	✓	\$149 6mths	✓
CyberOne ADSL	www.cyberone.com.au	\$19.95† 200MB 256Kb/s	\$39.95† 1GB 512Kb/s	\$64.95† No limit 512Kb/s	\$74.95† 15GB+ 1.5Mb/s	✓	✓	\$99 6mths	✓
Cyberspace Internet ADSL	www.cyberspace.net.au	\$21.95† 200MB 256Kb/s	\$46.95† 5GB 512Kb/s	\$57.95† No limit 512Kb/s	\$79.95† 10GB 1.5Mb/s	✓	✓	\$99 6mths	✓
DCSI	www.dcsi.net.au	\$32.95 500MB 256Kb/s	\$49.95 10GB 512Kb/s	\$59.95 20GB 512Kb/s	\$69.95 20GB 1.5Mb/s	✓	✓	\$125 6mths	✓
Diamond Telecom ADSL	www.diamontdtelecom.com.au	N/A	\$54.95† 25GB 512Kb/s	\$54.95† 25GB 512Kb/s	\$89.95† 35GB 1.5Mb/s	✓	✗	\$80 6mths	✓
DigiPlus	www.digiplus.com.au	\$29.95† 10GB 256Kb/s	\$42.95† 5GB 512Kb/s	\$49.95† 10GB 512Kb/s	\$89.95† 10GB 1.5Mb/s	✓	✗	\$99 1mth	✓
Dodo ADSL	www.dodo.com.au	\$29.90† 1GB+ 256Kb/s	\$39.90† 1GB+ 1.5Mb/s	\$79.90† 20GB+ 8Mb/s	\$59.90† 15GB+ 1.5Mb/s	✓	✓	\$99 6mths	✓
DragNet ADSL	www.dragnet.com.au	\$29.95* 200MB+ 256Kb/s	\$45.95* 1.5GB 512Kb/s	\$69.95 15GB 512Kb/s	\$79.95 15GB 1.5Mb/s	✓	✓	\$119 6mths	✓
Ecomtel ADSL	www.ecomtel.com.au	\$24.90† 300MB 256Kb/s	\$54.90† No limit 512Kb/s	\$54.90† No limit 512Kb/s	\$69.90† No limit 1.5Mb/s	✓	✓	\$120 1mth	✓
EFTel ADSL	http://w3.efitel.com	\$19.95† 500MB 256Kb/s	\$39.95† 2GB 512Kb/s	\$59.95† 25GB+ 512Kb/s	\$69.95† 25GB+ 1.5Mb/s	✓	✓	\$125 12mths	✓
Fonebox ADSL	www.fonebox.com.au	\$29.90* 200MB 256Kb/s	\$49.90 5GB 512Kb/s	\$79.90 30GB 512Kb/s	\$79.90 10GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Broadband Internet									
Green Tree Frog ADSL	www.greentreefrog.net.au	N/A	\$55 40GB 512Kb/s	\$77 100GB 512Kb/s	\$99 80GB 1.5Mb/s	✓	✓	\$132 6mths	✓

Name	Online	Budget plan (under \$35)	Light plan (under \$60, at least 512Kb/s, minimum 1GB data limit)	Family plan (under \$80, at least 512Kb/s, minimum 10GB data limit)	High-speed plan (under \$100, at least 1.5Mb/s, minimum 10GB data limit)	National	Spam filtering	Setup fee and contract length	Rapid transfer
Regular broadband ISPs (1.5Mb/s or less)									
Green Tree Frog Business ADSL	www.greentreefrog.net.au	N/A	\$55* 40GB 512Kb/s	\$77* 100GB 512Kb/s	\$99* 80GB 1.5Mb/s	✓	✓	\$132 6mths	✓
Hande Communications ADSL - Shaped	www.hande.net.au	\$32.95 500MB* 256Kb/s	\$44.95 1.5GB* 512Kb/s	\$79.95 30GB* 512Kb/s	\$84.95 10GB* 1.5Mb/s	✓	✓	\$119.95 1mth	✓
Hande Communications ADSL - Usage Based	www.hande.net.au	\$32.95* 500MB* 256Kb/s	\$44.95* 1.5GB* 512Kb/s	\$69.95* 15GB* 512Kb/s	\$89.95* 15GB* 1.5Mb/s	✓	✓	\$119.95 1mth	✓
Hugonet Home ADSL Broadband	www.hugonet.com.au	\$29.95* 250MB* 256Kb/s	\$49.95* 1GB* 512Kb/s	\$69.95 25GB* 512Kb/s	\$79.95 20GB* 1.5Mb/s	✓	✓	\$99 12mths	✓
IF Com ADSL	www.ifcom.com.au	\$24.95†* 200MB 256Kb/s	\$49.95† 25GB 512Kb/s	\$49.95† 25GB 512Kb/s	\$84.95† 35GB 1.5Mb/s	✓	✓	\$99 12mths	✓
Infinity Plus Residential DSL	www.infinityplus.net.au	N/A	\$54.95† 25GB 512Kb/s	\$54.95† 25GB 512Kb/s	\$84.95† 30GB 1.5Mb/s	✓	✓	\$100 6mths	✓
ISP ADSL	www.isp.net.au	\$29.70* 1GB 256Kb/s	\$42.90* 5GB 512Kb/s	\$77 No limit 512Kb/s	\$69.30* 25GB 1.5Mb/s	✓	✓	\$120 6mths	✓
IntegrityNet ADSL	www.integritynet.com.au	\$29.95* 200MB 256Kb/s	\$59.95* 5GB 512Kb/s	\$69.95* 10GB 512Kb/s	\$99.95* 10GB 1.5Mb/s	✓	✓	\$139 12mths	✓
Internet Information Group ADSL	www.iig.com.au	N/A	\$59* 5GB 512Kb/s	\$79* 15GB 512Kb/s	\$99* 15GB 1.5Mb/s	✓	✓	\$120 12mths	✓
Internode Home ADSL	www.internode.on.net	N/A	\$39.95 8GB 512Kb/s	\$69.95 40GB 512Kb/s	\$49.95 10GB 1.5Mb/s	✓	✓	\$129 6mths	✓
Internode SOHO ADSL	www.internode.on.net	N/A	\$59.95 10GB 512Kb/s	\$69.95 20GB 512Kb/s	\$69.95 10GB 1.5Mb/s	✓	✓	\$129 6mths	✓
Interworks ADSL	www.interworks.net.au	\$34.95† 1GB 256Kb/s	\$49.95* 5GB 512Kb/s	\$79.95 No limit 512Kb/s	\$99.95* 25GB 1.5Mb/s	✓	✓	\$119 3mths	✓
ISage Internet ADSL	www.isage.aunz.net	\$24.95* 200MB 256Kb/s	\$44.95 25GB* 512Kb/s	\$79.95 35GB* 1.5Mb/s	\$76.95† 15GB* 8Mb/s	✓	✓	\$89 6mths	✓
Ispace ADSL	www.ispace.net.au	\$29.95* 200MB 256Kb/s	\$49.95 5GB 512Kb/s	\$79.95 60GB 512Kb/s	\$79.95 15GB 1.5Mb/s	✓	✓	\$120 6mths	✓
ITEL ADSL	www.itel.net	\$34.95†* 4GB 256Kb/s	\$49.95†* 4GB 512Kb/s	\$54.95† 60GB 512Kb/s	\$79.95† 60GB 1.5Mb/s	✓	✓	\$129 12mths	✓
ADSL Broadband	www.itginternet.net.au	\$31.79* 200MB 256Kb/s	\$54.89 5GB 512Kb/s	\$65.89 30GB 512Kb/s	\$76.89 15GB 1.5Mb/s	✓	✓	\$95 6mths	✓
Jazinet ADSL	www.jazinet.net	N/A	\$46.50 25GB 512Kb/s	\$46.50 25GB 512Kb/s	\$88 35GB 1.5Mb/s	✓	✓	\$110 1mth	✓
Jump Internet ADSL	http://jumpnet.com.au	\$30* 200MB 256Kb/s	\$50* 2GB 512Kb/s	\$80 30GB 512Kb/s	\$80 15GB 1.5Mb/s	✓	✗	\$0 12mths	✓
Koala ADSL	www.koalatelecom.com.au	\$29.95† 500MB 256Kb/s	\$39.95† 3GB 512Kb/s	\$79.95† No limit 512Kb/s	\$49.95† 10GB 1.5Mb/s	✓	✓	\$129.95 6mths	✓
Lets Go ADSL	www.letsgo.com.au	N/A	\$59.95 30GB 512Kb/s	\$59.95 30GB 512Kb/s	\$79.95 30GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Lizzy ADSL	www.lizzy.com.au	\$16.95* 200MB 256Kb/s	\$39.95 2GB 512Kb/s	\$54.95 No limit 512Kb/s	\$94.95 No limit 1.5Mb/s	✓	✓	\$99 6mths	✓
Lucidity Communications ADSL	www.lucidity.net.au	N/A	\$59.95† 25GB 512Kb/s	\$79.95† 35GB 1.5Mb/s	\$79.95† 35GB 1.5Mb/s	✓	✓	\$120 1mth	✓
Matilda Internet DSL	www.matilda.net.au	\$29.95* 200MB 256Kb/s	\$49.95* 1GB 512Kb/s	\$59.95 10GB* 512Kb/s	\$69.95 10GB* 1.5Mb/s	✓	✓	\$110 1mth	✓
Midcoast Internet DSL	www.midcoast.com.au	\$28.50* 200MB* 256Kb/s	N/A	\$71.50* 10GB* 512Kb/s	\$98* 10GB* 1.5Mb/s	✓	✓	\$99 6mths	✓
Netspace Home ADSL	www.netspace.net.au	\$29.95* 300MB 256Kb/s	\$29.95† 1GB* 512Kb/s	\$69.95† 20GB* 1.5Mb/s	\$54.95† 10GB* 1.5Mb/s	✓	✓	\$99 6mths	✓
Netspace SOHO ADSL	www.netspace.net.au	N/A	\$49.95† 15GB 512Kb/s	\$79.95† 20GB 1.5Mb/s	\$64.95† 10GB 1.5Mb/s	✓	✓	\$99 6mths	✓
NetSpeed ADSL	www.netspeed.com.au	\$19.95†* 200MB 256Kb/s	\$34†* 1GB* 512Kb/s	\$74† 30GB* 512Kb/s	\$74†* 10GB* 1.5Mb/s	✓	✓	\$2.00 \$139 12mths	✓
North Queensland Telecom ADSL	www.nqtelcom.com.au	N/A	\$49.95 25GB 512Kb/s	\$79.95 35GB 1.5Mb/s	\$79.95 35GB 1.5Mb/s	✓	✓	\$90 1mth	✓
Oprawe ADSL	www.oprawe.com.au	N/A	\$44.95 5GB 512Kb/s	\$74.95 60GB 512Kb/s	\$81.95 15GB 1.5Mb/s	✓	✓	\$129 6mths	✓
Oprawe Excess DSL	www.oprawe.com.au	\$32.95* 2GB 256Kb/s	\$39.95* 2GB 512Kb/s	\$74.95* 60GB 512Kb/s	\$81.95* 15GB 1.5Mb/s	✓	✓	\$129 6mths	✓
Oprawe Bundle DSL	www.oprawe.com.au	\$27.95† 2GB 256Kb/s	\$34.95† 2GB 512Kb/s	\$69.95† 60GB 512Kb/s	\$80.95† 15GB 1.5Mb/s	✓	✓	\$129 6mths	✓
Ozfone Digital	www.ozfone.com	\$34.50* 1GB 256Kb/s	\$44.50* 2GB 512Kb/s	N/A	\$89.50* 10GB 1.5Mb/s	✓	✓	\$129 6mths	✓
Pacific Internet DSL	www.pacific.net.au	\$29.95* 250MB 256Kb/s	\$39.95 1GB 512Kb/s	\$54.95 No limit 512Kb/s	\$49.95† 10GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Primus Flexible Broadband	www.primus.com.au	\$24.95† 500MB 256Kb/s	\$34.95† 1GB 512Kb/s	\$69.95† 20GB 1.5Mb/s	\$59.95† 12GB 1.5Mb/s	✓	✓	\$118 1mth	✓
Quantum ADSL	www.quantumtelecom.com.au	N/A	\$49.95† 25GB 512Kb/s	\$79.95† 35GB 1.5Mb/s	\$79.95† 35GB 1.5Mb/s	✓	✓	\$140 1mth	✓
Rabbit Internet ADSL	http://rabbit.com.au	\$27.95†* 200MB 256Kb/s	\$34.90†* 1GB 512Kb/s	\$80†* 60GB 1.5Mb/s	\$59†* 10GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Rapid Net ADSL	www.rapidnet.com.au	\$34.95 500MB 256Kb/s	\$44.95 5GB 512Kb/s	\$49.95 15GB 512Kb/s	\$79.95 12GB 1.5Mb/s	✓	✓	\$109 6mths	✓
Realcom ADSL	www.realcomaustr.com.au	\$27.95* 200MB 256Kb/s	\$54.95 25GB 512Kb/s	\$54.95 25GB 512Kb/s	\$94.95 35GB 1.5Mb/s	✓	✓	\$0 12mths	✓
REEDS.NET Internet Services	www.reeds.net.au	\$29.95* 300MB 256Kb/s	\$49 25GB 512Kb/s	\$79.95 35GB 1.5Mb/s	\$79.95 35GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Reynolds Technology ADSL	www.reynolds.net.au	N/A	\$50 1.5GB* 512Kb/s	\$75 15GB* 512Kb/s	\$75 10GB* 1.5Mb/s	✓	✓	\$110 1mth	✓
Saco Technology ADSL	www.sacotech.com.au	N/A	\$45.95† 2GB 512Kb/s	\$75.95† 60GB 512Kb/s	\$74.95† 15GB 1.5Mb/s	✓	✓	\$129.95 6mths	✓
Simplici ADSL	www.simplici.com.au	\$31 500MB 256Kb/s	\$47 5GB 512Kb/s	\$57 30GB 512Kb/s	\$87 10GB 1.5Mb/s	✓	✓	\$99 3mths	✓
Skyways ADSL	www.skyways.net.au	\$29.95* 200MB 256Kb/s	\$49.95* 10GB 512Kb/s	\$69.95 No limit 512Kb/s	\$99.95 30GB 1.5Mb/s	✓	✓	\$109 12mths	✓
Skyways DSL + Phone	www.skyways.net.au	\$29.95†* 5GB 256Kb/s	\$39.95†* 10GB 512Kb/s	\$59.95† No limit 512Kb/s	\$89.95†* 30GB 1.5Mb/s	✓	✓	\$109 6mths	✓
Snowynet ADSL	www.snowy.net.au	\$29.90* 200MB + 256Kb/s	N/A	\$69.90 No limit 512Kb/s	\$99.90 No limit 1.5Mb/s	✓	✓	\$110 6mths	✓
Southern Cross Telco ADSL	www.sctelco.com.au	\$29.95† 400MB 256Kb/s	\$39.95† 2GB 512Kb/s	\$79.95† 30GB 1.5Mb/s	\$79.95† 30GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Spin Internet	www.spin.net.au	\$19.95†* 300MB 256Kb/s	\$29.95†* 2GB* 512Kb/s	\$59.95† No limit 512Kb/s	\$49.95† 15GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Supernerd SuperDSL	www.supernerd.com.au	\$24.95* 500MB 256Kb/s	\$44.95* 10GB 512Kb/s	\$59.95 No limit 512Kb/s	\$89.95* 30GB 1.5Mb/s	✓	✓	\$110 6mths	✓
TalkTODAY ADSL	www.talktoday.com.au	\$29.95† 500MB* 256Kb/s	\$41.95† 5GB* 512Kb/s	\$64.95† 100GB* 512Kb/s	\$69.95† 30GB* 1.5Mb/s	✓	✓	\$119 6mths	✓
Telstra Australia SME & Res	www.telstra.com.au	N/A	\$49.95 25GB 512Kb/s	\$79.95 35GB 1.5Mb/s	\$79.95 35GB 1.5Mb/s	✓	✗	\$120 6mths	✓
Telstra BigPond ADSL	www.bigpond.com	\$29.95* 200MB* 256Kb/s	N/A	\$69.95† 12GB* 1.5Mb/s	\$69.95† 12GB* 1.5Mb/s	✓	✓	\$2.50 \$99 12mths	✓
Fat Free Broadband ADSL	www.fatfreephones.com	N/A	\$49 25GB 512Kb/s	\$49 25GB 512Kb/s	\$89 35GB 1.5Mb/s	✓	✓	\$110 1mth	✓
TrumpNet ADSL	www.trump.net.au	\$29.95* 200MB 256Kb/s	N/A	\$75.95 No limit 512Kb/s	\$99.95 No limit 1.5Mb/s	✓	✓	\$135 12mths	✓
TSM Broadband	www.tsminternet.com.au	\$29.95 5GB 256Kb/s	\$39.95 10GB 512Kb/s	\$69.95 50GB 1.5Mb/s	\$49.95 20GB 1.5Mb/s	✓	✓	\$129 6mths	✓
Web-Hermits ADSL	www.web-hermits.com	\$34.95 2GB 256Kb/s	\$41.95 2GB 512Kb/s	\$49.95 20GB 512Kb/s	\$81.95 20GB 1.5Mb/s	✓	✗	\$109 6mths	✓
Westnet Broadband1	www.westnet.com.au	\$29.95† 500MB 256Kb/s	\$34.95† 1GB 512Kb/s	\$54.95† 10GB* 512Kb/s	\$69.95† 10GB* 1.5Mb/s	✓	✓	\$0.83 \$99 6mths	✓
Winshop ADSL	www.winshop.com.au	\$29.95 500MB 256Kb/s	\$39.95 3GB 512Kb/s	\$59.95 15GB 1.5Mb/s	\$59.95 15GB 1.5Mb/s	✓	✓	\$139 12mths	✓
Yauessie Net ADSL	www.yauessie.com.au	\$27.90* 1GB* 256Kb/s	\$33.90* 1GB* 512Kb/s	\$74.90* 36GB* 512Kb/s	\$54.90* 14GB* 1.5Mb/s	✓	✓	\$145 6mths	✓
Yauessie Net ADSL	www.yauessie.com.au	\$24.90* 1GB* 256Kb/s	\$29.90* 1GB* 512Kb/s	\$79.90* 48GB* 1.5Mb/s	\$49.90* 14GB* 1.5Mb/s	✓	✓	\$145 12mths	✓
ZCTS ADSL	www.zcts.net	N/A	\$46.50 25GB 512Kb/s	\$46.50 25GB 512Kb/s	\$88 35GB 1.5Mb/s	✓	✓	\$110 1mth	✓

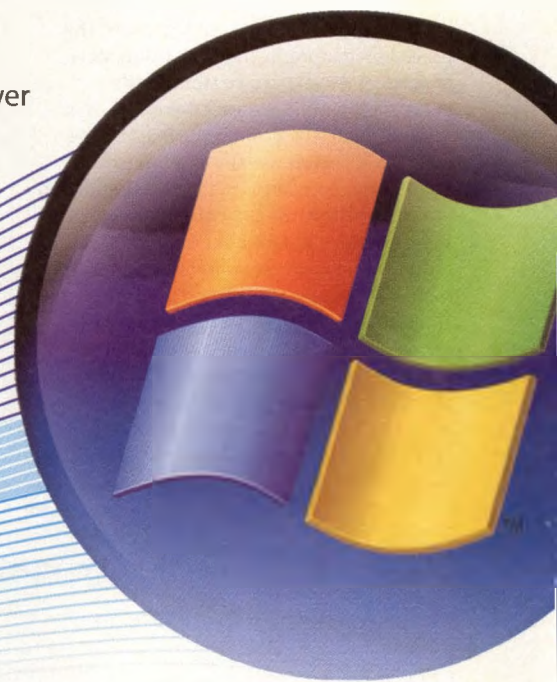
Key: * ISP charges excess usage fees when you exceed your download limit; † This price only available if bundled with long distance telephony from the ISP; + Additional download allowance available with this plan for use in off-peak periods; ^ ISP combines sent and received data when calculating usage; # Minimum BigPond Cable setup fee is based on 12-month contract with modem included; Telstra does not offer a BYO modem option.

**BREAKTHROUGH
TECHNOLOGIES**

Breakthrough technologies

New technologies appear every day — but rarely do so many arrive at the same time with the power to change our computing experience. In our special cover story, we witness:

- The end of the era of desktop software, as the web increasingly takes over delivery of applications and content.
- The top new technologies and services that are taking the power and DNA of the PC and PC applications into a wider universe of devices and products, in order to surround our existence with massive computing power.
- The arrival of PC and disc player technologies that can handle high-definition video, paving the way for the explosion of high resolution in films and home video.



Twelve years ago, the crunching chords of the Rolling Stones' 'Start Me Up' kicked off a global media circus: Windows 95 was in town, and it was going to change the way we used our PCs forever. The arrival of Windows XP was less dramatic, but still newsworthy — but the launch of Windows Vista has been greeted with little more than a global shrug. It's the best version of Windows that Microsoft has ever created, and yet the launch has been a major non-event. According to some industry watchers and

Microsoft's rivals, that's because operating systems are obsolete: the future is a combination of smart devices and online applications. It seems that even Ray Ozzie agrees: speaking to analysts in mid-2006, Microsoft's chief software architect announced that "the PC era is over." So where does that leave Microsoft?

Microsoft is desperately fending off attackers including open source, Apple, AJAX applications and smart gadgets in a noble but ultimately doomed struggle for survival. There's

BREAKTHROUGH TECHNOLOGIES

Windows Presentation Foundation, a subset of .NET 3.0, allows developers to create desktop apps, web apps, or a hybrid of the two.

no doubt that Windows Vista has been born in a very different world from that of Windows 95. Then, the internet was an interesting and expensive sideshow; now cheap, flat-rate broadband is everywhere and constant connectivity is having a catastrophic effect on all kinds of businesses. Route-planning software seems anachronistic in a world of satnav and Google Maps; price-checking sites have squeezed retailers' margins; directory enquiries services are losing business to free competition from search engines; blogging systems have effectively wiped out the market for entry-level web publishing software; and digital downloads, fresh from hammering the record business, are poised to wipe out video shops, DVD rental services and possibly next-generation DVD formats, too.

In the early 2000s we were told that the internet would also wipe out Microsoft. This proved premature. In an era of dialup, slow processors and expensive storage, the infrastructure simply wasn't there. Now it is.

Until relatively recently, the main online threat to Microsoft was the emergence of open source software, notably the Firefox web browser and the free OpenOffice.org office suite. However, ubiquitous broadband, cheap online storage and programming technologies such as AJAX have resurrected the idea of online applications, and there's a growing army of online Office-alikes. While some of them, such as AjaxWrite (www.ajaxwrite.com), are more proof of concept than usable applications, others are very capable. Google Docs & Spreadsheets is a useful, if basic, word processor

and spreadsheet package, particularly if you take advantage of its integration with Google Mail and Google Calendar. Both ThinkFree Office (www.thinkfree.com) and Zoho Office Suite (www.zoho.com) offer surprisingly powerful email, word processing, spreadsheet and presentation programs designed for easy online collaboration. Both programs' basic versions are free and include generous storage: ThinkFree's service comes with 1GB of online storage space.

ThinkFree is cross-platform, and it could be poised to become a big player: according to the CEO of ThinkFree's parent company, Haansoft, ThinkFree has already had two meetings with the team responsible for Google's recent acquisition of YouTube.

IS BROWSER-BASED BEST?

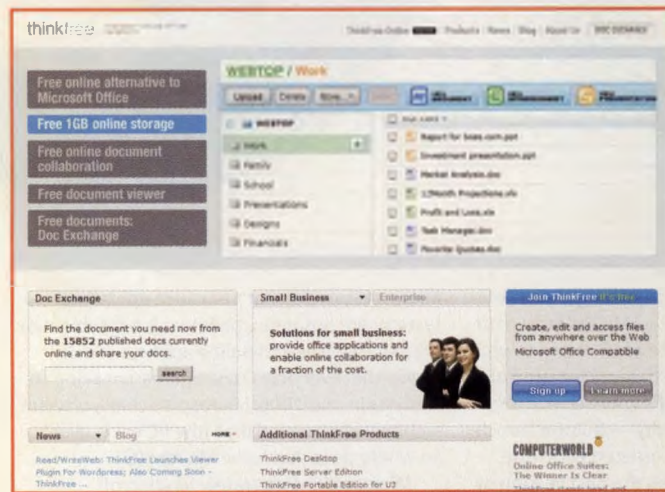
For business users, there are several obvious problems with web-based software: availability, support, security and integration. Network congestion, maintenance or outages can render even the most robust web-based programs unavailable; for the consumer, that's inconvenient, but for business, outages cost money. Similarly, the lack of telephone support — most web-based systems offer web-based support in the form of knowledge bases or online forums — or on-site support can also mean expensive downtime while users wait for a solution to their problems.



Of particular importance to businesses is security: by their very nature, web-based programs transmit and receive data over the open internet. Despite constant patching and service packs, browsers remain relatively vulnerable, and the risk of sensitive data being intercepted or sent to the wrong person naturally increases when files are stored even temporarily on remote web sites rather than on a user's hard disk or local network.

There are two other kinds of security to worry about: security of provision and financial security. With a growing number of start-ups competing for the same customers, and dotcom boom-style levels of hype surrounding the sector, some firms are bound to crash and burn. If you've backed the wrong horse, your software and any hosted files will vanish when the provider does. Even if your chosen provider stays in business, its business model could change significantly: free, ad-supported products could become subscription-based, or firms that already charge subscription fees could

Online applications such as ThinkFree Office are surprisingly powerful Office-alikes — and also come in server-based versions for local networks.



Office Live comes in three tiers: a basic, free service and two subscription-based alternatives, but they're not yet available in Australia.



WHAT GOOGLE'S WEB SERVICES HAVE TO OFFER BUSINESS USERS

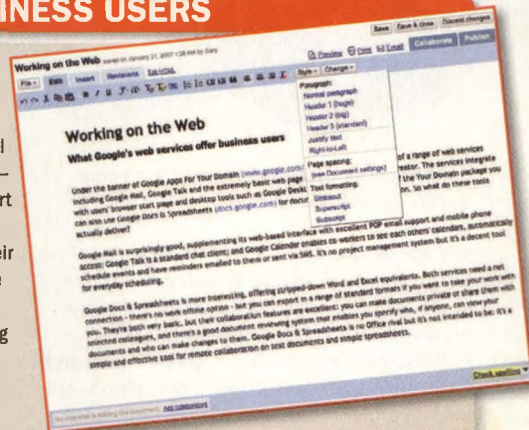
Under the banner of Google Apps For Your Domain (www.google.com/a), firms can take advantage of a range of web services including Google Mail, Google Talk and the extremely basic web page creation tool, Google Page Creator. The services integrate with users' browser start page and desktop tools such as Google Desktop, and while it's not part of the Your Domain package, you can also use Google Docs & Spreadsheets (<http://docs.google.com>) for document editing and collaboration. So what do these tools deliver?

Google Mail is surprisingly good, supplementing its web-based interface with excellent POP email support and mobile phone access; Google Talk is a standard chat client; and Google Calendar allows co-workers to see each other's calendars, automatically schedule events and have reminders emailed to them or sent via SMS. It's no project

management system, but it's a decent tool for everyday scheduling.

Google Docs & Spreadsheets is more interesting, offering stripped-down Word and Excel equivalents. Both services need a net connection — there's no 'work offline' option — but you can export in a range of standard formats if you want to take your work with you. They're both very basic, but their collaboration features are excellent: you can make documents private or share them with selected colleagues, and there's a good document-reviewing system that allows you to specify who, if anyone, can view your documents (and who can make changes to them).

Google Docs & Spreadsheets is no Office rival, but it's not intended to be: it's a simple and effective tool for remote collaboration on text documents and simple spreadsheets.



Google's Docs & Spreadsheets isn't for power users, but it's a simple and effective document collaboration and reviewing system.

DESPITE CONSTANT PATCHING AND SERVICE PACKS, BROWSERS REMAIN RELATIVELY VULNERABLE

significantly increase their per-user charges. Web-based Office-a-likes also fall down on integration — that is, integration between the office programs and other business systems. With Office 2003, Microsoft repositioned Office as a 'system', a front-end for critical business applications, and Office 2007's emphasis on XML-based data sharing, collaboration, information management and productivity continues that process. For basic document creation and editing, online applications are fine, but if you're building a front-end for mission-critical data, then they're hopelessly inadequate.

The tipping point for AJAX applications in business is likely to be when firms can run them on their own networks, rather than doing it over the internet, and many of the web-based application developers are already moving in that direction. ThinkFree Office is available in a server edition that runs on your local network rather than the open internet, while Zimbra (www.zimbra.com) integrates with Outlook and Exchange and, again, is also available as a version to run on a local network.

The most important firms in this area, though, are likely to be Adobe and Microsoft. Adobe's Apollo project (<http://labs.adobe.com>), due for release later this year, allows developers to create applications in AJAX or Flash and deploy them on the desktop as well as online. Microsoft is competing in this area, too: its Windows Presentation Foundation (WPF) platform and WPF Everywhere (WPF/E) plug-in take a similar approach, providing developers

with a toolkit capable of building desktop applications and web apps or a hybrid of the two.

VIRTUAL REALITIES

While online applications blur the boundaries between software and web services, virtualisation technology — running multiple virtual machines on the same hardware — could blur things even more. According to Fujitsu Siemens CTO Dr Joseph Reger, it could "do away with the PC form factor altogether". Pointing to SANDisk's U3 system, which allows you to store email and PC settings on a portable flash drive, Reger states that memory sticks with 30GB of storage space will allow us to store entire virtual machines on a single thumb drive. We could then access our virtual machines from all kinds of devices.

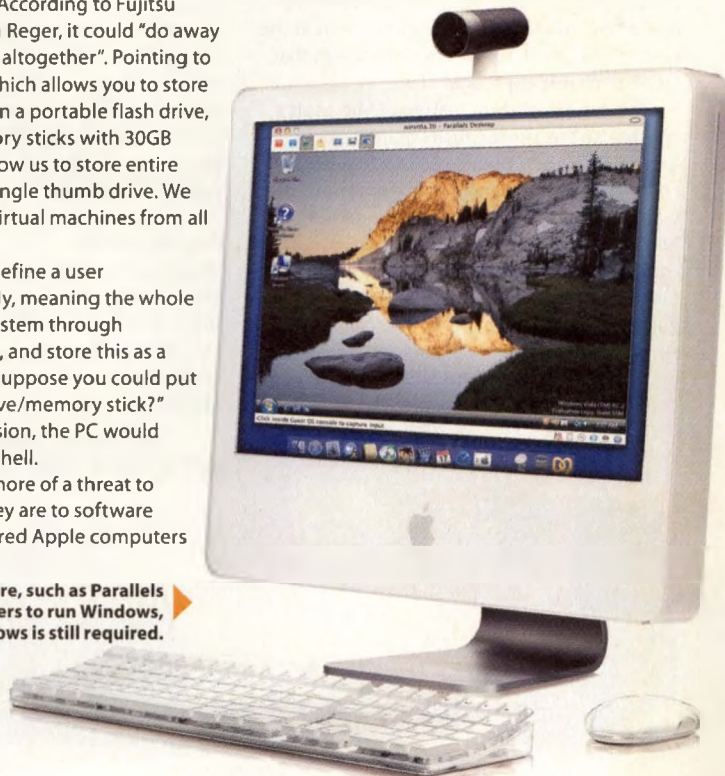
"What if you could define a user environment completely, meaning the whole stack from operating system through applications to settings, and store this as a disk image?" he asks. "Suppose you could put that in a USB thumb drive/memory stick?" According to Reger's vision, the PC would then become a simple shell.

Such scenarios are more of a threat to hardware firms than they are to software firms. While Intel-powered Apple computers

will happily run Windows, either as dual-boot systems via Apple's Boot Camp or in virtual machine software such as Parallels Desktop, you still need to buy a copy of Windows. Microsoft even makes its own virtualisation software: while it's conceded the Mac market to Boot Camp and Parallels, Windows users can get Virtual PC 2007 for free.

It's possible to run Windows programs on other operating systems without first installing Windows, notably via WINE on Linux and the similar CrossOver software for Macs, but such emulation can be patchy and performance is slow. As its developers note, "CrossOver doesn't

Virtualisation software, such as Parallels Desktop, allows Mac owners to run Windows, but a copy of Windows is still required.



BREAKTHROUGH TECHNOLOGIES

Mobile computing devices are fast taking over the roles of PCs for easy online access.

run every Windows program, and some that do run, run with flaws".

MICROSOFT AND THE POST-PC ERA

Games consoles can now download TV and video content and access the internet. Phone browsers, such as Opera Mobile, can access AJAX-based web applications on the move, and forthcoming devices such as Apple's iPhone are more like internet appliances than traditional mobile phones. As mobile internet charges finally become sensible, the move to web-based information and applications should accelerate.

Microsoft is a major player in this arena. Devices from sat-navs to smartphones run embedded Windows; Windows Mobile is even appearing in in-car entertainment; and later this year, the Xbox 360 will put a Microsoft-branded TV and movie download service in millions of living rooms.



WHAT MICROSOFT HAS DONE WITH THE XBOX, IT INTENDS TO DO WITH WINDOWS AND OFFICE AS WELL

The Xbox 360 is an excellent example of Microsoft's new strategy. As Ray Ozzie told analysts in July, "In the PC era, [we] would naturally begin with a PC mindset. We're in a new era — an era in which the internet is at the centre." The Xbox 360 was designed with that internet-centric approach.

The most important feature of Microsoft's console isn't its processor, its graphics or its games. The most important Xbox feature is connectivity, both locally and over the internet via Xbox Live. In addition to online gaming, Xbox Live also allows messaging, video conferencing and content purchasing via micropayments (the system is currently for game-related downloads, but from late 2007 the service will also offer TV shows and movie downloads). Microsoft intends Xbox Live to be cross-platform, so, for example, Windows Vista

users will be able to play against Xbox 360 owners via Live and Windows Mobile users will be able to access some Live features via their mobile phones.

Local connectivity is important, too. If you connect it to a Windows PC, the Xbox becomes a fully fledged media device that streams music, movies and photos across the home network, either wired or wirelessly. That's something Microsoft will take further this year with the Windows Home Server (WHS), which was announced at January's Consumer Electronics Show. The WHS is a simple device designed to share files between PCs, Xboxes, Zunes, Macs and any other networked device.

Boasting expandable storage, automated backup, internet access sharing, file sharing and printer sharing, WHS will be a headless device

that's configured via a web browser, and it will also be accessible via Windows Live, allowing you to remotely connect to your home network to upload or download files — including media files such as music or TV programs — or to change its settings. It's a good example of Microsoft's current thinking: take existing technology (the Windows Home Server is based on Windows Server 2003), make it easier to use, add a dash of connectivity and integrate it with your other products.

ONLINE OFFICE

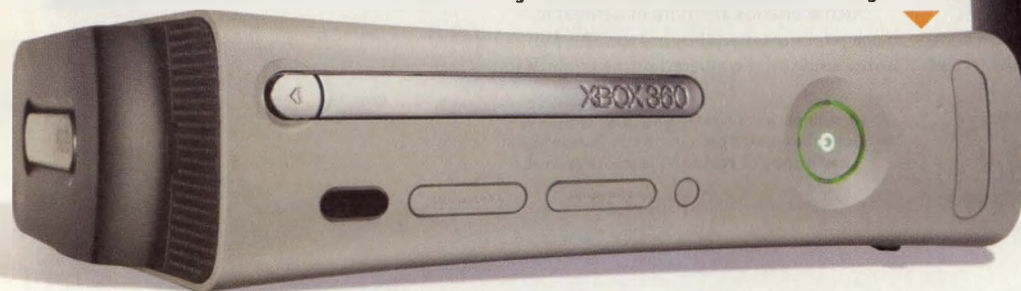
What Microsoft has done with the Xbox, it intends to do with Windows and Office, too. Under the banners of Windows Live and Office Live, Microsoft will bring its internet-centred approach to everyone. As Ozzie explains, Microsoft's model is "to use our Windows Live

The Xbox 360 and PlayStation 3 are the first bulk-selling items to fill the role of the PC in the lounge room.



services platform as an experience hub, and to use the PC, the browser and mobile devices as different experience-delivery mechanisms for the value we aspire to deliver." Ozzie uses the example of Outlook 2007, which allows users to publish shared calendars online, and Office OneNote Mobile, which works on smartphones but syncs with its PC-based equivalent.

Microsoft's vision is best described as 'horses for courses': some applications and data work best on a PC or mobile device, others are more suited to centralised data services, and as a result Microsoft will offer a mix of web-based and desktop products. For example, Office users might run Outlook 2007 on their PCs in the office but use the web-based Office Live Mail while travelling, or groups might use Office on



Apple's TV box is a stripped-down PC designed to bridge your computer and TV.



their respective desktops but track projects and share files via Office Live Collaboration. In both cases, the web-based Live products synchronise with users' desktop software.

Microsoft's approach to Live is to offer different levels of service with different pricing models, so the most basic Live services, such as Windows Live Mail and Office Live Basics, are free, while more useful services, like Office Live Premium, offer additional features, storage and support in return for a monthly subscription. The Office Live products are not yet available in Australia, but their arrival is inevitable.

It's clear that Microsoft sees its Live services as an extension of, rather than a rival to, Windows and Office. For example, the system requirements for Office Live Basics are IE6 or later on Windows XP, Server 2003 or Windows Vista, while more powerful versions of Office Live also require Office 2000, 2003 or 2007, with the warning that 'certain advanced features require Office 2003 or higher'. For the foreseeable future, Microsoft's money will largely come from sales of operating systems and boxed software, with online services supplementing rather than replacing its flagship products.

Ray Ozzie believes that the move from software to services will happen in three waves. The first wave, services for consumers, is already here in the form of web-based email, blogging platforms, photo sharing and sites such as YouTube. Windows Live already competes in this arena with products such as Windows Live Spaces (blogging and photos), Windows Live Expo (a cross between classified advertising and contact management) and the forthcoming SoapBox (a YouTube rival). The business model for this first wave is free content, with advertising paying the bills, and a second tier of paid-for, premium services. That's the route



BOTH MICROSOFT AND ITS RIVALS BELIEVE THAT TECHNOLOGY IS BEING TRANSFORMED BY WEB-BASED SERVICES

Microsoft has adopted.

The second wave, services for small businesses, is imminent, and that's where Microsoft is currently concentrating its energies; in the long term, the third wave will bring services to large corporate customers. As we've already seen with the more comprehensive Office Live packages, such services are likely to be closely tied to specific software products and based on a subscription model rather than advertising.

END OF THE OS?

The combination of ever-cheaper computing, cheap storage and cheap communications means that firms can build giant data centres using commodity hardware to deliver web services to truly massive audiences.

But does this mean that a desktop operating system will become redundant anytime soon? Both Microsoft and its rivals believe that technology is being transformed by constant connectivity and web-based services, but Microsoft believes that the traditional desktop — whether it's a Windows PC or a different Windows-powered device — will remain dominant. As Ozzie told Microsoft developers at the recent TechEd conference, "Twenty-five years ago, at the beginning of the PC revolution, some predicted the death of the mainframe,

because of the PC. Now there are extremists who believe that every application will be accessed through a browser, and that everything will move to this computing cloud, that your enterprise data centre will go away, that you'll trust third parties with your business information and systems. ... Our services won't be disconnected from existing applications, but instead are going to be designed to complement and extend our Windows and Office platforms to the internet."

Microsoft's vision is the most persuasive one, and few of the current crop of web-based applications are genuine rivals to traditional desktop programs. There's no real reason why applications can't be cross-platform, portable and focused on specific tasks, rather than today's one-product-fits-all software model. As these specific tasks become more prolific, we could find that almost every desktop OS function could be catered for, leaving only a shell for interfacing with hardware. The simpler the shell, the more secure your desktop could be, with the last resort reinstall taking seconds from flash memory storage.

Microsoft may not admit to having a stripped-down, modular, web-based version of Windows and Office stashed away in a lab somewhere, but the smart money would be on it. **ADC**



**BREAKTHROUGH
TECHNOLOGIES**

Innovations for 2007

John Brandon explores the ten most impressive technologies that will emerge over the next few years — and what they will mean for future computing.

When a computer scientist said "the best way to predict the future is to invent it," he hinted at the truth: innovation occurs when companies react to changing computer needs and develop new solutions. The ten innovations described here are perfect examples — in the next few years, they will lead to actual products, services and technologies that will improve our lives.

LANGUAGE-TRANSLATION: GOOGLE LABS

Google is synonymous with search, but its extensive work in machine-based language translation is also impressive. Of all the computer science problems, translation is one of the toughest — mostly because each word can translate into multiple meanings. And, translation requires a massive database of words, fast computer and memory processing, and intelligent algorithms. Today, the Google Labs machine-based translation system uses 10 trillion words and can analyse billions of n-grams — which is a way of predicting language patterns — at incredibly fast speeds. (To see its progress so far, just visit www.google.com/language_tools and type in a sample language test).

Over the next few years, Google will focus on the top 20 languages in the world, developing at least 400 language

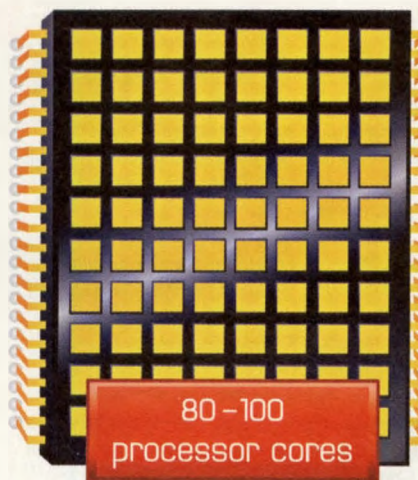
pairs for translation. Another crucial milestone will be creating a new translation metric to replace IBM's outdated (but still effective) BLEU language translation accuracy metric, a process that experts believe could take Google up to 10 years. The company also intends to develop specialised interfaces for translation: imagine a mobile phone that you can speak into that translates your speech into text for an email, or an in-car navigation system that automatically reads road signs and speaks warnings in your own native tongue.

According to Peter Norvig, the director of research at Google Labs, the company is embarking on a challenge to have a "reasonably good translation between any two languages, or almost any language" within the next ten to 20 years.

"Machine translation could hopefully search and browse the whole web in your native language and you won't notice that you are looking at automatic translations," says Norvig. "Some texts are very hard to translate because of cultural differences and because of colloquial expressions that don't have a good counterpart in the other language, but when sticking to more standardised text, for instance newspaper texts, press releases, company home pages and user manuals, errors will be minimal."

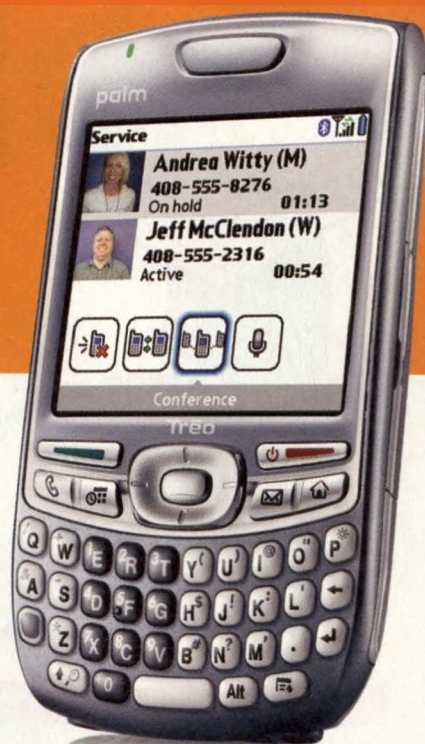


Tomorrow's processors promise mind-boggling performance, thanks to the number-crunching power generated by nearly 100 cores working in parallel.



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ALTERNATIVES TO SILICON: MIT

Transistor material is another area that's ripe for innovation. In the past 30 years, companies such as Intel and AMD have developed ways to make silicon transistors

smaller and more powerful. However, according to Jesús del Alamo, a professor of electrical engineering at MIT, that progression will end in about ten to 15 years. It will be impossible to make silicon transistors any smaller and, after a certain point, the performance will degrade as the transistors become smaller.

MIT has developed a new material, called InGaAs (indium gallium arsenide), that could eventually replace silicon transistors. As a compound semiconductor, the transistors follow a logical progression in size reduction: at 60 nanometres, InGaAs transistors perform better than the most state-of-the-art silicon. At 30nm, the performance increases beyond current silicon. And, del Alamo suggests that they are close to the goal of a 15nm InGaAs transistor that performs even better.

"These materials have very high electron velocities," says del Alamo. "You can therefore afford to trade some of that fantastic velocity against density and power to make very dense and fast logic circuits that operate at very low voltages."

The main challenge with InGaAs transistors is that they will require a new fabrication process, which itself will require new chemical processes as well. Yet, with powerful, energy-efficient 15nm transistors, whole new consumer electronics categories could emerge, such as a mobile phone that projects a high-def holographic image.

PERVASIVE WIRELESS CHIP TECHNOLOGY: HP LABS

One trend in computing is to use wireless chips on real-life objects, such as an oxygen mask in an aeroplane. HP Memory Spot technology is one example. The chip uses the 2.45GHz band to communicate wirelessly using RFID, and can contain up to 4MB of local data. For example, in an aircraft, the chip could be



The environment and company profits should all benefit from the promised advent of self-erasing paper.

NEW CHEMICALS — THE FOUNDATIONS OF THE FUTURE

At MIT Labs, much of the current research into finding a material that's more powerful, more energy-efficient and longer lasting than silicon involves chemical testing for new compounds that are more conducive to processor performance. The indium gallium arsenide transistor is a blend of compounds that performs better than silicon in smaller sizes.

Just as science develops these compounds, the ancillary components in a PC must also depend on scientific innovation: the indium gallium arsenide transistor will not work with existing processor fabrication methods. And, if a silicon replacement finds its place in the industry, it will alter the fabrication for many other components, including motherboards and memory modules.

In fact, many of the innovations in computing

are dependent on one another. If a new material leads to processor performance increasing exponentially, we will enter an age of parallel computing where new programming techniques will have to be developed to take advantage of the increased speed.

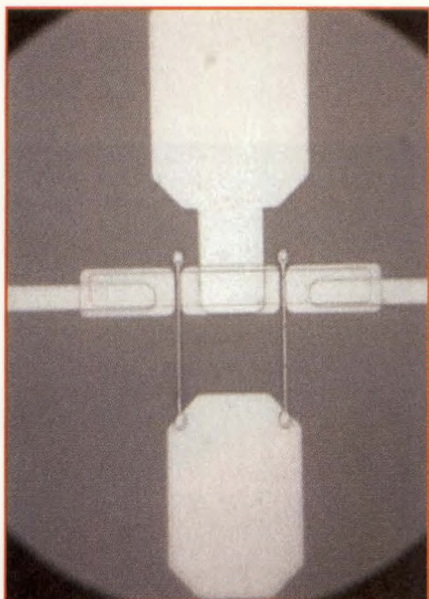
Once computers are more powerful, more artificially intelligent and more power-efficient, we will then start depending on them for even longer-term storage — which means new methods of storing data will have to be used, since current methods are too slow and not reliable. Once again, this innovation process depends on science: new phase-change memory techniques use certain kinds of atoms to store information as ones and zeros.

Still, some innovations are less dependent on science. For example, most of the research at

Yahoo! and Google involves machine language and machine learning, where a computer uses new programming techniques to learn language usage, predict and adapt to human intent, and present more relevant and categorised results.

Even with these advances, science plays a part, because this research depends on faster and faster computers, memory stores and adaptable networks that use nanoscale sensors. Display technology also uses new liquid crystallisation techniques (such as those used in a 3D monitor) to show an image that's viewable from multiple angles.

All these advancements show computing is nowhere near reaching a saturation point in innovation. In fact, we may one day look back at a 3GHz processor and a system with 1GB of RAM and wonder how we ever got anything done.



Transistors will continue to shrink, while still increasing in power, because of a new material developed at MIT called InGaAs.

rice and uses non-volatile memory similar to flash. There's no external power supply, since it uses the reader/writer as a passive inductive power source.

NATURAL UBIQUITOUS NETWORKING SYSTEMS: **ALCATEL-LUCENT BELL LABS**

Networks are more pervasive than ever: wireless broadband for mobile phone, Wi-Fi in the home, high-speed municipal networks that span across entire geographic regions. At Bell Labs, scientists are developing a natural ubiquitous network that unifies disparate networks for more seamless interactions, with built-in artificial intelligence that learns your networking preferences and behaviours — and that relies on nanoscale sensors that respond to human touch, smell and sight. "If you think about whom you are interacting with now, it's typically around 100 or 200 people," says Jeong Kim, the president of Bell Labs. "We are developing a natural ubiquitous network that would let you interact with perhaps thousands of people, and in a way that's intuitive and not limited to your proximity."

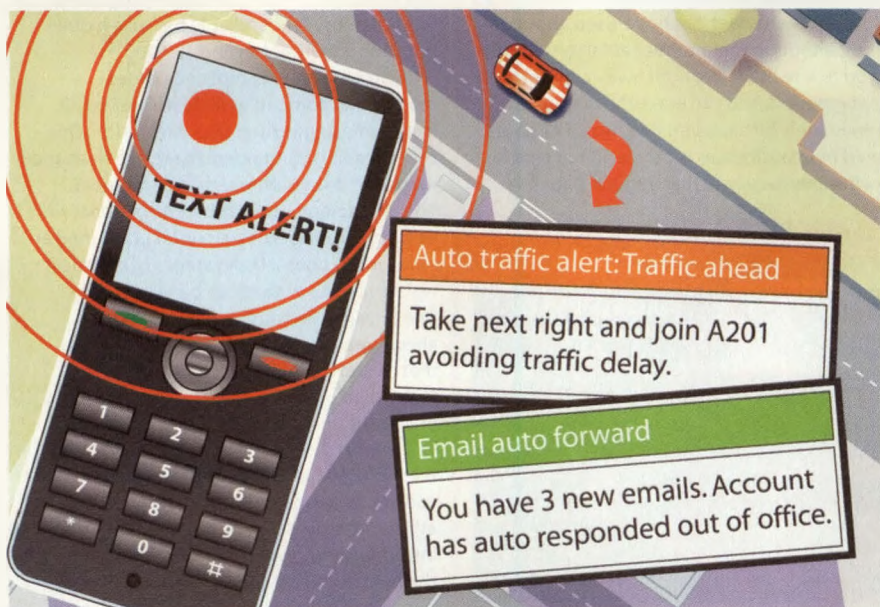
placed on each oxygen mask with information about maintenance. If an oxygen mask is replaced, it would contain a new Memory Spot chip. Then, the airline could read the data over the RFID wireless signal — which speeds along at 10MB/s over a short range.

Another example is to use the Memory Spot on a server so that network administrators can track components. This prevents warranty fraud and helps companies comply with strict regulations. The admin wouldn't need to open the case to read the maintenance record on the server. The chip is about the size of a grain of

HANDY TIP

Surface computing seeks to make everyday objects, such as desks and tables, become part of a computer infrastructure.

Naturally ubiquitous networking devices combine nanoscale sensors and wireless broadband to adapt the information they provide to your circumstances.



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BREAKTHROUGH TECHNOLOGIES

Nanotechnology is the science of tiny objects, such as this ball, which is smaller than the width of a human hair.

One example of this: sensors embedded in a mobile phone and other gadgets would know who you are and where you are going — and then predict your behaviour. For example, with an intelligent network, the device would know you are travelling and automatically forward your email, or know that you are driving to an area where the weather conditions are causing delays (and suggest alternative routes).

SELF-ERASING PAPER: PALO ALTO RESEARCH CENTER

In the age of the internet, paper has become a short-term presentation medium. In business, people use paper for memos, flow charts and PowerPoint handouts. Paper documents are rarely used for long-term archiving, which is due in part to regulations such as the Sarbanes-Oxley Act in the US that dictates how information should be archived electronically and must be easy to retrieve.



MATERIAL THAT ALLOWS YOU TO WRITE DATA AT A SPEED THAT'S 1,000 TIMES FASTER THAN MAGNETIC MEDIA

Environmental issues over paper recycling are also pushing paper out of business.

The Xerox Transient Documents project, announced in November 2006, seeks to find an answer to the short-term documentation issue. A self-erasing paper substrate, treated with a chemical compound that uses a specific wavelength of light, will evaporate within 16 to 24 hours. Each sheet can be re-used about 50 times, although that number escalates quickly if you re-use the sheet right away without a drying period. You can erase the document immediately by exposing it to heat. The paper could help businesses produce 90 per cent less environmental waste than regular paper.

1000X FASTER PHASE-CHANGE MEMORY: IBM ALMADEN RESEARCH CENTER

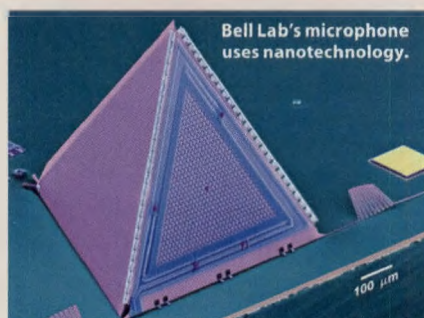
One of the most critical areas of innovation in computing is storage media, even though magnetic hard disk drives have been in use for the past three decades. The problem: failure rates on disk drives are extremely high, and flash memory is not reliable because it does not support writes beyond 100,000.

Also, corporate compliance issues require that companies archive most email, instant messaging and documentation. One of the leading contenders to replace flash and magnetic disks is phase-change memory. The technology uses a substrate material with two atomic properties: a crystal phase, and an amorphous phase. Using stages of electrical resistance, the phases can be marked as a one or zero. The result is a material that allows you to write data 200,000 (or twice that of flash) at a speed that's 1,000 times faster than magnetic media, measured in millionths of a second.

IBM has developed a phase-change technology that's focused mostly on fast speeds, as opposed to the Intel and Samsung efforts with phase-change, where they intend to introduce products to market sooner — within the next five years. Phase-change will likely become the medium for digital cameras,

INSIDE BELL LABS

Bell Labs, based in New Jersey, has been operating since 1925. It has developed the transistor, the charged coupled device (CCD), Unix, the C computer programming language, the laser, communication satellites, cellular telephony and an internet protocol system for multimedia. Much of its recent work has been in the network and nanotechnology fields, combining the two to develop new batteries, lenses, microphones, sensors, optical networks, soft switches, smart wireless antennas and routers for better internet transmissions.



laptops and other gadgets that require speedy operation, as opposed to petabyte-level capacity. For that, holographic memory — which places an interference pattern on a substrate and then rotates the pattern slightly to embed another pattern — works best for long-term archiving.

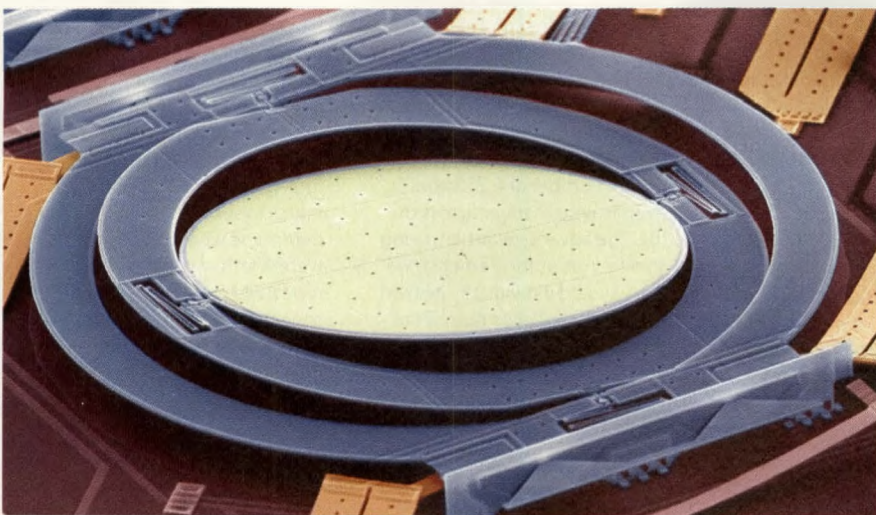
NATURAL 3D DISPLAYS: **PHILIPS RESEARCH**

A notable advancement in display technology is 3D projection, where an image comes alive and seems to move in a physical space. Unlike high-definition, which adds more pixels to a flat image, 3D imagery is more lifelike because the image is viewable from multiple angles. It mimics what your eyes are doing: projecting a slightly different perspective for the left and right field of view.

The Philips WoWvx monitor is one of the first and best displays that use the technology, and it does not require special glasses like the first-gen models. It's a mass-produced, commercial product that businesses such as casinos, grocery stores or science labs can use. (Philips has no plans to sell the 3D display to the consumer market — at least, not yet.)

The WoWvx reveals that there's a clear path of innovation in 3D imaging — there's now a lower cost for LCD manufacturing, and consumers have not completely warmed up to high-definition as the premium standard.

"The Philips WoWvx uses a sheet of lenticules, which are transparent, cylindrical lenses assembled on top of the LCD panel, to project a different image in your left and right eye," says Rob de Vogel, the senior director of business creation for Philips 3D Solutions. "Using both images, the brain creates the 3D experience."



 Microscopic sensors like this nanoscale mirror could one day lead to a pervasive network that senses your movement and adapts.

ANY-SURFACE SCREENS: **MICROSOFT RESEARCH**

Objects in the everyday world — such as a desk, table, or white board — have yet to interface well with computer technology. The Microsoft Research PlayTogether surface computing project is designed to address that problem. The system consists of two PlayAnywhere systems that each consist of a table-mounted projector, camera, and an IR illuminant that senses movement. Software algorithms apply 'visual codes' to 2D objects on the surface, so that the PlayAnywhere system can distinguish between an object that can be manipulated and another object on the table. The initial 'proof of concept' is an interactive game where two participants can move objects such as chess pieces or spaceships. The first PlayAnywhere system captures the movements of a 2D object, such as a chess piece, and shows that image — and the player's hand — on the second system. Because PlayTogether uses any flat surface, it looks more realistic.

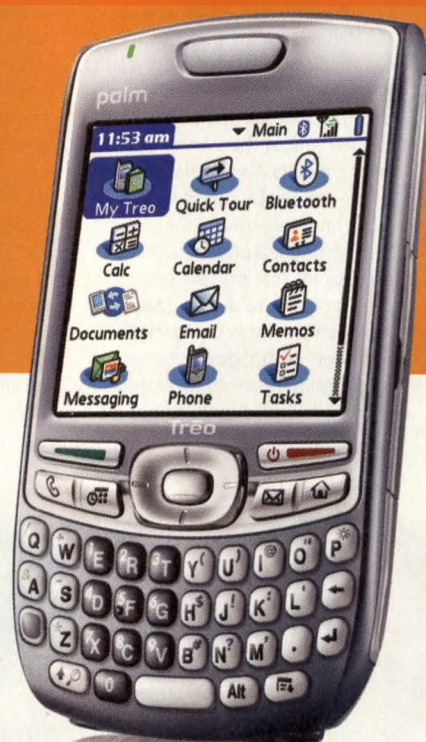
PlayTogether is not necessarily intended as a gaming technology, however. According to researcher Andrew D. Wilson, PlayTogether shows how surface computing could lead to amazing innovations for manipulating maps in 3D space, for business communication where two employees could work on the same project at the same time in a virtual space, and for sales demonstrations. The innovation is important because the two PlayAnywhere modules communicate so quickly with one another

HANDY TIP

Parallel computing will one day make PCs fast enough so that there's no delay in processing file transfers, 3D renders or internet downloads.

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BREAKTHROUGH TECHNOLOGIES

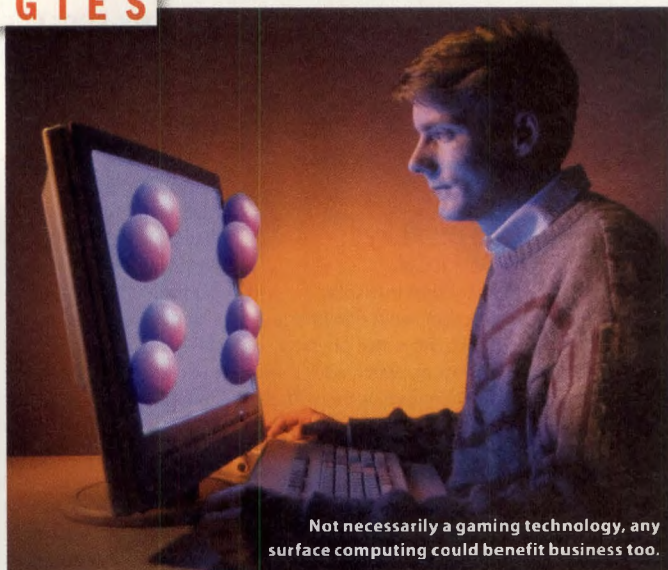
using a 30Hz frame rate, so, as one participant moves an object, the other system shows the movement in real time.

INTENT-DRIVEN SEARCHES: YAHOO! RESEARCH

The current paradigm for search has remained almost unchanged for the past decade — type your search term, view results. Perhaps the only major shift is that the textual ads are now harder to weed out of the standard search results. Yahoo! Research, a little-known but highly experimental arm of Yahoo!, is exploring adaptive search techniques that present results that are easier to digest. They are not necessarily categorised, although Yahoo! does a better job of grouping results than Google. A slider lets you adjust whether the

results are more for information or commercial use.

What's interesting about this innovation is what is happening in the code. A machine learning system analyses web sites based on the search term and can predict your intent with a search. For example, if you typed 'bank account', the machine learning code would know that you were not looking for river banks, but a financial institution. Yet, a slider and colour-coding system helps you control whether the results will help you find a bank or learn about banking. With each search, the code splits into two paths: one for learning and one for testing. Then, the results appear after this period of learning (analysing web sites) and testing (finding good results). This process means the search results do not appear as quickly, so part of the experiment is to present



Not necessarily a gaming technology, any surface computing could benefit business too.

a subset of results immediately and then in intervals.

10 TERA-SCALE COMPUTING: INTEL TECHNOLOGY LAB

Intel co-founder Gordon Moore's prediction (that transistor density would double every 18 months and eventually reach a state of high transistor complexity) has proved accurate. To alleviate this continuum, Intel has begun experimenting with Tera-scale computing, where one PC has as many as 80 processor cores.

"As you move from 65 to 35 to 22 nanometer cores, there will be a very large number of transistors available," says Jerry Bautista, the technology director for Intel's Microprocessor Technology Lab. "It's important to think about how you design a core when you have a huge sea of transistors. Tera-scale computing allows us to use a large number of transistors in a replicating manner across the die. The advantage is that, using smaller computer elements, we can validate individually instead of validating a large number of transistors. The general trajectory at Intel is to increase counts from

four to eight up to 80 or 100 cores. It's all part of the continuum."

Bautista describes how this move to a multicore architecture will change development. Today, programmers write code for successive tasks — where task B is dependent on task A to finish. With parallel computing and the multicore architecture, programmers can use the multiplicity of cores to serialise some tasks, but make others independent and fire on multiple cores at the same time.

The future scenarios are mind-boggling in terms of the power that would result. According to Bautista, computers would become much more responsive — there would be very little delay between events in an operating system. And, artificial intelligence would become much more possible. He described a scenario where a computer could analyse a four-hour video of a football match in seconds — and then determine which highlights were worth watching, based on repeated crowd reactions and speech patterns, and create a two-minute sample video — all on a home PC. **APC**



3D displays will offer immersive imagery for games, video and photography.

HANDY TIP

Machine learning uses the same process as human learning — understanding a variable, testing its validity, relearning and then applying the knowledge.



High definition is taking over

The switch to high definition will be as momentous as the change from black-and-white to colour in the 1970s. And it's already started.

Incredibly, high-definition television technology is nearly as old as the PC. In Australia, HDTV broadcasts began in January 2001 in the capital cities. Yet, high definition has largely lived on expensive sets showing demo reels in department stores or on PCs with HDTV tuner cards. In short, it's been irrelevant for most consumers.

But things are changing quickly and dramatically. Several technologies and market trends are converging and pushing high definition through the entire video ecosystem, from the camcorders used to shoot family movies to the discs that hold Hollywood movies (and the home theatres being created around media centre PCs).

A symbolic turning point was the recent launch of Sony's PS3. It came with a no-compromise Blu-ray player that delivers high-

definition video at its maximum 1080p resolution (see 'HDTV Resolutions'). At the time, high-definition disc players in either of the competing Blu-ray and HD DVD formats *were* available in Australia — but only in the shape of a couple of \$1,000-plus standalone players and internal drives.

Since there's a death match going on between Sony's PS3 and Microsoft's Xbox, Microsoft anticipated the arrival of the PS3 and its Blu-ray drive with an external HD drive based on the Microsoft-supported HD DVD format. Suddenly, HD disc players were turning up in homes that would never have considered spending \$1,000-plus for a HD player — and more than double that for an HDTV set.

HD disc players are critical to the spread of HD video because they finally let users access HD content of their choosing — from

Hollywood (and the sex industry!) — which will be more appealing than the current Australian TV HD broadcasts. The HD disc players will also deliver the full high-definition experience for consumers who have HD television sets able to display the highest HD resolution of 1080p. By contrast, TV broadcasts only deliver HD at definitions ranging from 520p to 1080i.

At \$999.95, the PS3 isn't cheap, but few consumers are going to buy a PS3 just for its HD disc player, making it Sony's Trojan horse for getting high definition into the lounge room. The 20GB version of the PS3, to be released later this year, will be even cheaper than the current 60GB model.

The external HD drive for Microsoft's Xbox 360 is an affordable gem, selling for \$249 — roughly one quarter the price of comparable standalone HD disc players on the market. It

BREAKTHROUGH TECHNOLOGIES

Sony is pitching its Blu-ray burner at users who've shot home movies with HD camcorders.

goes with the \$499 Xbox 360, but users have already made it work with a PC.

The upshot of the PS3 and Xbox HD drives is that high-definition video is now a major discussion point on the consoles' internet forums — even if most of the people taking part don't have high-definition TV sets. They're discussing HD resolutions and HD content. In short, high-definition is now on the radar, even if, outside the consoles, standalone HD players are still largely for early adopters.

Samsung's Blu-ray BD-P1000 Disc Player retails for a hefty \$1,599. Panasonic is releasing a Blu-ray player, the DMP-BD10, which is designed to work with a matching receiver (SA-XR700) and speaker system (SP-TP1000), to create a complete high-definition home theatre system. But, at \$2,749, the Panasonic HD disc player is way more expensive than its competitors. Toshiba has made the first move towards releasing more affordable HD disc players with its HD DVD-based HD-E1, which sells for \$1,099. But it does not support 1080p, which means it won't show the full 1080p resolution possible from HD DVD discs if a user has a TV that can show 1080p.

Blu-ray and HD DVD disc players are also available through some notebooks and PCs, such as Sony's Vaio VGN-AR18GP and Altech's Maestro Pro 2 media centre PC. But for users who want high-definition drives for their existing PCs, the main option locally is Sony's BWU100A Blu-ray disc player/burner, which supports recording to both 50GB and 25GB BD-R (write once) and BD-RE (rewritable) discs.

It can store up to four hours of 1080p video on a single dual-layer 50GB BD disc — but ironically, it can't show commercial movies. This is because commercial movies (unlike home-



PORN'S SUPPORT FOR HD DVD CANNOT BE UNDERESTIMATED: IT'S AN INDUSTRY WORTH US\$50 BILLION A YEAR

made ones) can only play through a conga line of HDCP-compliant components (High-Bandwidth Digital Content Protection), from the PC's graphics card through the cable to the monitor. Generic PCs with all these compliant components are not generally available yet.

Instead, Sony is pitching the Blu-ray burner at users who want to record home movies that they've shot with any of the high-definition camcorders now flooding the market. Sony also points out that the 50GB discs are ideal for computer backup and data storage applications. Since the BWU100A can also record DVDs and CDs, only the one drive is needed by the PC.

As yet unresolved is the disc format battle between Blu-ray and HD DVD. But, unlike the VHS and Betamax battle, in which Betamax video was clearly superior but lost out to the cheaper VHS, both Blu-ray and HD DVD technically produce the same image resolution and quality on screen. The choice will be over the availability of content, storage capacity,

extra in-built interactive features and the cost of each format.

Blu-ray's supporters (see 'The Camps') argue that Blu-ray is already winning the race, pointing out that more movies are available on Blu-ray than on HD DVD. In the US, in March, three of every four HD discs sold were Blu-ray. The Blu-ray camp is also officially supported by more movie studios.

But just as it looked like Blu-ray might be pulling into a clear lead, the American porn industry weighed in and declared its support for HD DVD after earlier intimating it was going to support Blu-ray. This is partly because HD DVD is cheaper to produce and apparently Sony doesn't like Blu-ray replication plants being used for pornography. Porn's support for HD DVD cannot be underestimated, since it's an industry that turns over at least US\$50 billion a year and accounts for at least 10 per cent of all discs sold. Supporters of HD DVD point to the porn industry's support of VHS as one of the key



Blu-ray players are still outside the price range that most consumers would consider affordable.

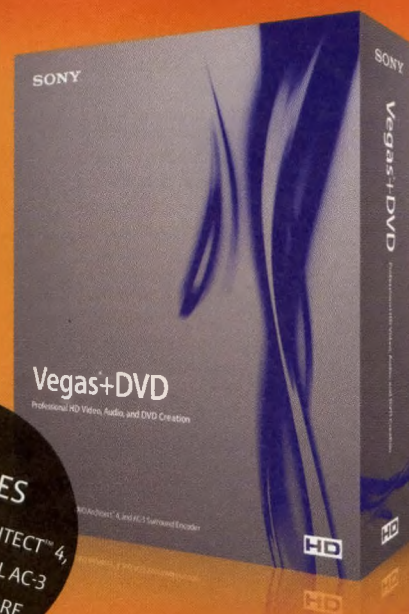
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BREAKTHROUGH TECHNOLOGIES

factors that won it the battle against Beta — and are hoping the same thing happens now.

However, a look at available HD titles tends to support the Blu-ray advocates. At time of writing, there were about 50 Blu-ray titles available locally versus around 30 for HD DVD. In both formats, the marquee titles are still old stuff like the *Lethal Weapon* and *Mission Impossible* movies, so there is still some way to go.

One advantage of HD DVD is that it's region-free, so titles bought in the US will play here. Blu-ray instead comes in three regions, with Australia lumped together with Europe and Africa/Middle East.

Analysts IDC believe telcos will also play a large part in driving the big consumer migration to high-definition. "As telcos will enter the increasingly complex digital home market with triple-play services, the intertwined digital services/applications and digital devices will further establish the TV as the central platform for communication in addition to home entertainment," says an IDC report. This would also drive demand for high-

definition TVs — such as plasma and LCD — according to the report.

And the final big driver of high-definition adoption will naturally be pricing. By the end of the year, standalone HD disc players are expected to retail for significantly less than \$1,000. Sony has already shown how quickly the cost of HD disc technology will drop. While Sony does not yet sell standalone HD disc players in Australia, it's planning to release a new player overseas in July that will retail for US\$599.99. This is a 40 per cent price drop compared to the first version of the player released late last year.

The migration to high definition won't just stop with consumers having higher-resolution movies. Each format will also bring interactivity that will be interwoven into the higher-quality pictures. The Blu-ray Disc Association (BDA), the standards body for the format, has already ruled that Blu-ray hardware must eventually support Blu-ray Disc Java (BD-J), the platform for interactive content. This is essentially a Java Virtual Machine that will make the interactivity on current DVDs look prehistoric, featuring picture-in-picture and links to the net and local storage for updates.

Ironically, it increasingly appears that the least important driver of the migration to high-definition is HDTV broadcasting by local TV stations. **IDC**

THE CAMPS



BLU-RAY

Blu-ray is led by Sony and supported by Apple, Hitachi, LG, Dell, Samsung, Sharp, Sun Microsystems, HP, TDK, Mitsubishi and Panasonic, and includes movie studios such as Sony Pictures, 20th Century Fox, Warner Bros., Disney and Fox. Warner Bros. and Paramount have a foot in both camps, though — announcing they are also supporting HD DVD.



HD DVD

HD DVD is led by Toshiba and NEC, and supported by Intel and Microsoft. Supporting studios include Warner Bros., New Line Cinema, Paramount Pictures and Universal Pictures.

HDTV RESOLUTIONS

High-definition video comes in three basic resolutions: 720p (1,280 x 720 pixels in computer terms, achieved with a progressive scan that sends an entire picture 60 times a second), 1080i (1,080 vertical lines with interlacing) and 1080p (1,920 x 1,080 pixels with progressive scan, aka. full HD).

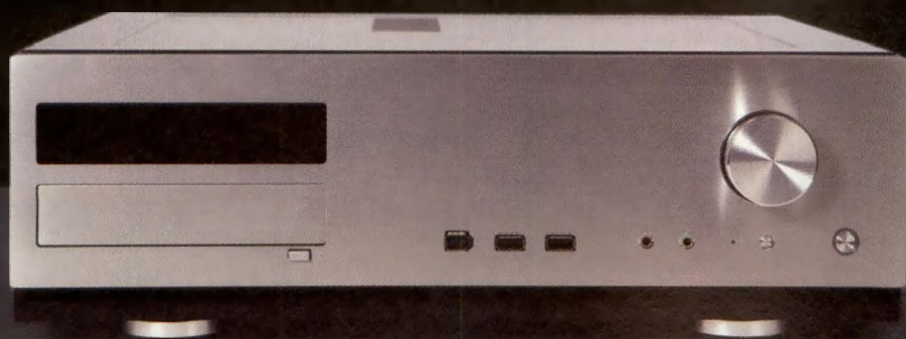
Most Australian TV channels broadcast at 720p or 1080i, and the difference between the two resolutions is largely undistinguishable (unless you sit very close to the screen). HD video intended for distribution on computers tends to be 720p, because monitors and graphics cards are better at showing progressive than interlaced video. Most HD television sets are for either of these resolutions, while the more expensive sets can do 1080p.

Blu-ray and HD DVD are able to deliver 1080p, so if you want the highest HD experience, you'll only get it through high-definition discs and 1080p-capable TVs.



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Power line networking

Nathan Davis looks at the tech that lets you route broadband over your home's power lines.

When most people think of networking their home, they think of wireless, or wired Ethernet. However, another option is a hybrid that combines with both network technologies. In fact, pretty much all houses are already fitted with this ready-to-use networking cable, with a port in practically every room. Yes, I'm talking about the mains power line.

The power lines in your home are in most cases ready to play host to a functional network. The technology is an easy option one can pick to use for the backbone, or the main communication line, of a home network. This is all thanks to a nifty networking unit — what we'll call a 'node' for simplicity's sake — measuring about that of a medium-sized AC adaptor.

In terms of connectivity, power line networking in the home doesn't use a new network technology, at least as far as you or your devices are concerned. It uses what we already have in our PCs, notebooks and other miscellaneous networked gadgets, so combinations of either or both an Ethernet port and a wireless access point can be found on a variety of available power line networking nodes.

You buy as many nodes as you need (up to a maximum of around sixteen) and plug them into the mains wherever in the house you want a network connection. You then simply connect to the nodes like you normally would with an

ordinary cabled Ethernet switch — namely, via Cat 5 or Cat 6 cable — or wirelessly, in the case of a node that features a wireless access point.

Even if you already have a network, these little devices are a useful option with which to extend or even increase the reliability of a wireless network and pave a way for easy Ethernet access, essentially to all corners of your home.

The beauty of the technology is the ability to send data over the power line. The nodes communicate by sending the data signal by means of modulated high frequencies, which we're told sits

known to cause noise on the power lines, rendering certain frequencies unusable, but there are methods in place to minimise these issues. For example, nodes based on the 'HomePlug' specification are able to automatically adapt to the environment.

"Generally, as the length of the power line and number of power outlets increases, the amount of attenuation increases," says Rochelle White from Netcomm, whose nodes are based around the HomePlug spec.

"As the signals travel down the power lines, a portion of the signal

dependent, consumers may get considerably less (or, in many cases, considerably more) coverage."

Case in point, Terry says: "I know of one installation where they are working out to a farm shed at 230 metres. That would be getting near the natural limit of the technology."

So, will these little nodes of joy work in your home? As I mentioned in passing, there is a possibility that your humble abode's power lines won't play ball. Essentially, if you have one power meter, you should be fine. Technically, all power outlets must be on the same 'electrical phase' in order for them



IT'S MUCH LIKE A WIRELESS NETWORK BUT, INSTEAD OF GOING IN THE AIR, IT GOES OVER THE POWER LINES

between the unlicensed 4MHz to 21MHz bands. These frequencies ride well above the existing frequency of the AC electricity over the power line, which in Australia's case is 60Hz.

As Michael Terry of Advatel succinctly says, it's much like a wireless network, "but instead of going in the air, it goes over the power lines." In peak conditions, they can currently reach speeds of 85Mbit/s right up to 200Mbit/s, although this varies greatly among the brands.

Power tools, hair dryers, vacuum cleaners and even fridges are

is lost through the wires (either absorbed or radiated). Signal frequency, type of wire used, how the wires are installed, and the length of the wire are factors in determining the amount of energy that is lost."

Jeff Fulton from Netgear tells us that to reduce the data attenuation — which is when the signal deteriorates — its products, also based on HomePlug, specify a 5,000-square-foot home as approaching the limit. However, he adds: "The limiting factor is often noise in a home's electrical system. Since noise is not directly distance-

all to interconnect. This is common in residential buildings.

Unfortunately, you simply won't be able to know this for sure until you try it out, but there shouldn't be any issues, "as long as the house uses copper wiring to distribute power to power points," says White.

Most nodes come equipped with some form of configurable encryption by default, typically based on DES or AES. This inbuilt security only exists between the networked nodes, so if you also require encryption over your connected network, either wired

POWER LINE NETWORKING VERSUS POWER LINE BROADBAND

Although it isn't identical, the power line technology for use inside the home is similar to that proposed for outside, on the main power lines, for delivering broadband internet to the masses.

According to Netgear's Jeff Fulton, "Similar chipset technology is being used in some broadband over

power line trials." The major difference, says Advatel's Michael Terry, is that "the external transmission in the street requires much higher power on the line to achieve the greater distances."

The higher power requirement can cause problems, however, and on its implementation difficulties,

Terry says, "This can, in some cases, create fields that can be 'seen' by other devices [such as radios]. If the two are in parallel, as is often the case in street cabling, then that can add to the possible interaction." He was sure to add that this isn't a problem with the lower-power internal nodes.

When we asked Fulton whether he thinks this is the way broadband internet access may be headed, he says, "It seems unlikely that any one technology will dominate broadband distribution in the foreseeable future. There will continue to be a mix of cable, DSL, wireless and other technologies used."



Advatel's PowerLine 85 Ethernet Adapter.

Netcomm's Turbo HomePlug product, based on the HomePlug spec.

or wireless, you'll need to set that up yourself.

Presently, there is no unified standard for power line networking in the home, although there is work being done in that area with IEEE's P1901 draft standard. It doesn't expect the standard to be completed until sometime in 2008, however, so when buying, either stick with the same brand and type,

or do your research and be damn sure it's a compatible model. For example, some HomePlug nodes are incompatible with other HomePlug nodes.

Where possible, some manufacturers recommend that owners plug the nodes directly into the wall, bypassing extension cords, power boards, and the like. All are against using surge

protectors, however, as they are quite likely to filter out the data signal. This is cause for slight concern, because no one, from what we have seen, offers any form of surge protection warranty on their nodes. If lightning strikes and kills the node, and possibly even what is connected, you're completely out of luck. "It is the owner's responsibility," says White

— and the other manufacturers mirror these words.

That boogie monster aside, though, the wonderful thing about such a network is its ease of relocation — it won't be left "for the landlord," according to Terry.

Who knows — perhaps, in the future, the power supplies in computers and other devices will include network cards? 

HOW POWER LINE NETWORKING WORKS



ADVERTISEMENT

Samsung SyncMaster 206BW

Samsung Electronics Australia has released two new widescreen monitors with Windows Vista Premium Certification. Intended for widescreen market, the 20-inch model (SyncMaster 206BW) and a 22-inch model (SyncMaster 226BW) will be available from March 1st 2007, and will have a **RRP's of \$599 and \$899.**



Living in a Linux-only universe, part 9

We all know what computers are *really* good for — games. Linux has never really been a gaming platform, so can Ashton Mills survive without Windows here?

ASHTON MILLS

Ashton has been a tech journo for over 12 years, including five years with APC.



THE RATINGS

In this project we're making the assumption that Windows does all that we need — and we're seeing if Linux and open source software measures up. Perhaps that's not an entirely fair place to sit; however, as the de facto in operating systems for which everyone is familiar, it's our best basis for comparison. So here's how we'll rate the experience of going Windows-free:

OPTIMAL

Passes with flying colours. The task could not only be completed, but better or easier than under Windows.



PASS

No problems. The task can be completed exactly as under Windows.



IFFY

When a task could only be partially completed or completed but not without issue.



FLOP

Not possible to complete at all. (Probably not a good thing.)



Well, I've left the realm of games to the end of our experiment because, frankly, Linux has never really been a gaming platform. In all the areas where Linux has excelled and even surpassed Windows, gaming is not one of them. So why not?

Pure market penetration aside, Microsoft wisely invested in the development of DirectX many years ago. While the initial implementations of DirectX were horrid, it quickly matured and has — quite literally — enabled a whole new age of gaming, and all because it simplified the development of games for the Windows platform.

Linux can't run DirectX, obviously, and while there are various inroads for providing Linux with a similar set of APIs for developers to use (such as SDL — Simple Directmedia Layer), it simply hasn't attracted the attention warranted to make this a priority in the open source community.

That's not to say Linux can't play games, however. They just might not be what you expect.

NATIVE GAMES

There are, in fact, loads of games made specifically for the Linux

platform, aka, 'native' games. They are, for the most part, not the blockbusters you'd expect.

Above and beyond the usual pre-installed puzzle games, there are various shoot 'em ups, platform games, racing games and even FPS games for Linux (see 'Free Games', right). But what about the big commercial releases we see under Windows? There are, actually, quite a few that were and are released with Linux binaries — though usually not in the box. You have to download them.

These include mainstream titles like Unreal Tournament, Quake 3, Doom 3, Neverwinter Nights, Serious Sam, America's Army and Enemy Territory. Largely, whether a game gets a native Linux version is

at the whim of the developers — after all, there so far hasn't exactly been a strong economic case to build them. Here, iD and Epic are the most supportive (as the above list shows), and there's no doubt this has endeared the Linux community towards them.

And how do these titles play? Exactly the same as under Windows. In fact, in some cases, these native games are a tad faster under Linux (probably more reflective of the kernel and OpenGL layer rather than anything else. This is actually the key — OpenGL is supported as equally well under Windows as Linux, but DirectX is Windows-only. Native games have, generally, been OpenGL.

While I haven't played any native Linux ports recently, I don't plan to buy any for this experiment — I'm better off saving my money for the next Windows-based game release (Crisis, anyone?). That said, blockbuster, native Linux games do exist. They're just few and far between and, unfortunately, as the entertainment world moves to DirectX10, any legacies of OpenGL support will dry up (and with it Linux's best native graphics support).

I'm scoring this in the middle — native ports work beautifully, but there just aren't enough of them.

ENTER CEDEGA

Never one to be stumped, the Linux community gave birth to a

company many years ago called Transgaming, which have, over time, continually developed a product now known as Cedega. Cedega is essentially a highly developed branch of WINE with DirectX support thrown in. It can, quite literally, allow you to play native Windows games on the Linux desktop. However, it's a commercial product with a subscription fee, which also includes the ability to cast 'votes' on which games you want the company to focus on running well under Linux next.

Cedega makes it possible to play not only some of the most popular titles ever made on Linux — such as Half-Life 2 and World of Warcraft — but it frequently allows you to play current releases as well. Sometimes they work out of the box; other times, Transgaming needs to update Cedega to get the games running (usually they do).

On Ubuntu, installing Cedega is a matter of running the supplied .deb package and adding a new 'Transgaming Cedega' menu which launches the Cedega browser. The browser is basically an interface to make it easier to manage your games, but games must be installed afresh from here, not simply run from a Windows partition.

As I'm a picky gamer and don't like forking out cash for games that won't hold my interest, which means I haven't bought a game for a while, I grabbed some recent game demos including Supreme Commander and Command and Conquer 3 to test Cedega out. According to the Transgaming web site, both are 'approved' and thus should work.

Unfortunately, they didn't. Supreme Commander bombed out at the Setup screen, and Command and Conquer 3 wouldn't even launch the installer (even with 'Big exe' ticked in Cedega). So I tried to grab a not-so-new game that wasn't a demo — the full, free version of F.E.A.R. Combat. The setup appeared to work until it came to the licence agreement, which the installer unrealistically expected to be read (and checks by seeing if the document has been scrolled to the bottom — something it seems Cedega couldn't pick up, and so the install couldn't continue). Surely, it can't be this hard just to handle setup routines?

Finally, I tried Steam, which I know should work as I have actually played games like Half-Life with Cedega a while back in earlier versions, but for some reason now it kept reporting that it couldn't find glob files, despite having the working directory correctly set.

▶ Tux got game...
or has he?



▲ The Cedega browser: good for managing games, when you install them.

It could be something specific to my system or my Ubuntu install, but I was disappointed that four out of four programs wouldn't work.

Cedega has a popular following and a large database of games that it can run to various levels of success. And given I have used it in the past (though not on an Ubuntu install at the time), it wouldn't be fair to score it too low, but it would have fared better if it worked for me now.



FREE GAMES

Thanks to open source, there are actually quite a few fun and free games

to download and for which the Ubuntu repositories have a fine selection. From the Applications > Add/Remove menu there's a whole range of games, from the basic classics like Nethack and Frozen Bubble through to 3D-accelerated gems like Chromium and Neverball. I played all of these. And then I played some more. And then some more. How do they make these so damn addictive?

They're not blockbusters, but they beat the pants off the free games bundled in Windows, and will keep you occupied for many hours longer. Good deal for the price point.



NVIDIA SUPPORT

In the process of installing some of the free games, I needed to update

the official Nvidia drivers, replacing the free 'nv' driver that comes with X11 (and which is designed for 2D acceleration only). This was easier said than done.

While these appear to be listed as installed in Ubuntu's Synaptic package manager, there's nowhere to enable these through Ubuntu's configuration options. In fact, rather than fuss around with Forums to get yet another feature *that should just work* in Ubuntu, I turned to

were official drivers, they also reset my screen resolution. No problem, right? I'll just run System > Preferences > Screen Resolution and reset it.

Or not — my screen resolution wasn't listed. Only 4:3 modes are present, and I have a wide-screen monitor. This has nothing to do with Nvidia: the Screen Resolution tool is a front end to the X11 configuration file, which will happily run the 1,920 x 1,200 resolution my monitor supports: it's just the tool doesn't know how to do it. Is it Gnome, or Ubuntu responsible? It doesn't matter, as a user I just need things to work — how can anyone expect

So, off to the command prompt I go to fix yet another glaring oversight, and something which anyone new to Linux would simply have no recourse to fix. I would really love to love Ubuntu here — Nvidia make great drivers for Linux — but I just can't when something so simple is omitted. Not impressed.

CONCLUSION

Well, we know the Linux forte isn't games, so it's not much of a surprise to score it low for native games, but I'm disappointed by Cedega and Ubuntu's handling of drivers and display — two



THANKS TO OPEN SOURCE, THERE ARE ACTUALLY QUITE A FEW FUN AND FREE GAMES TO DOWNLOAD

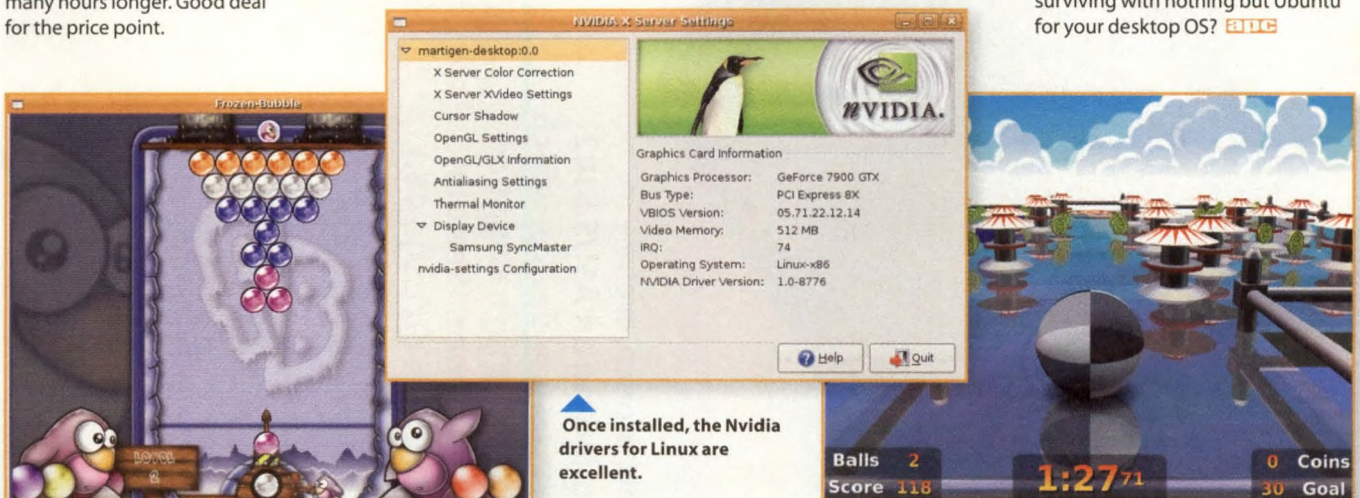
Automatix, which also has an 'Nvidia' option under Drivers.

This worked beautifully. Automatix downloaded, installed and — the most important step — configured the drivers. When I rebooted, I had full 3D-acceleration support. Unfortunately, given these

to take the distribution seriously as an alternative to Windows when it can't even properly set display resolutions? This isn't rocket science or genetics — setting one line in a text-based ini file from a selection of options could be programmed in minutes.

areas which could have redeemed it, but didn't. At least there were the free games — many of which take advantage of full 3D acceleration.

Next month: the conclusion of our foray into a Linux-only world. In the end, what's the final verdict on surviving with nothing but Ubuntu for your desktop OS? **ETIC**



▲ Once installed, the Nvidia drivers for Linux are excellent.



apc

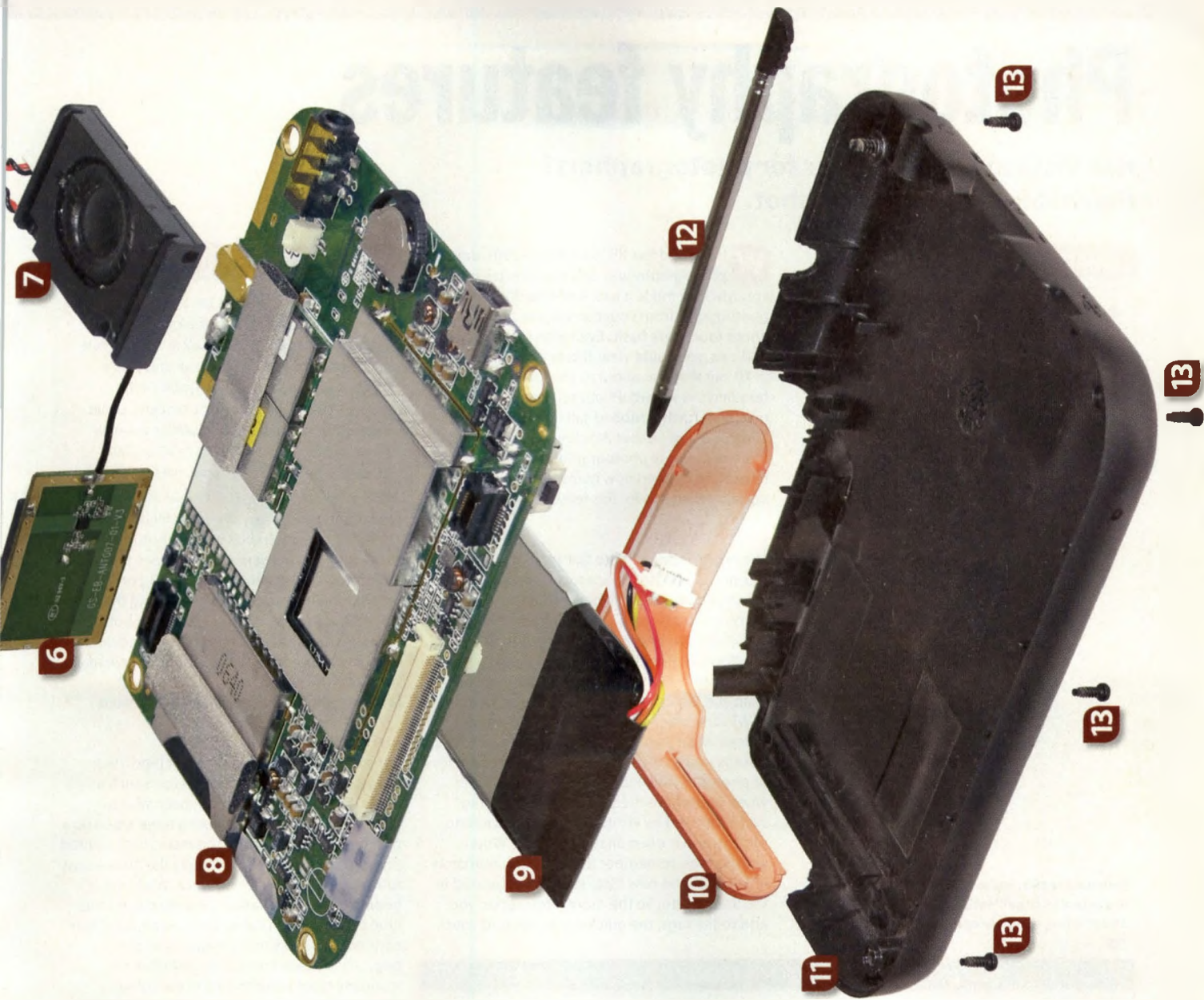
exploding tech



This month, we're exploding an ASUS S102 PND satnav device, which offers strong navigation performance. (See our full review on page 46.)

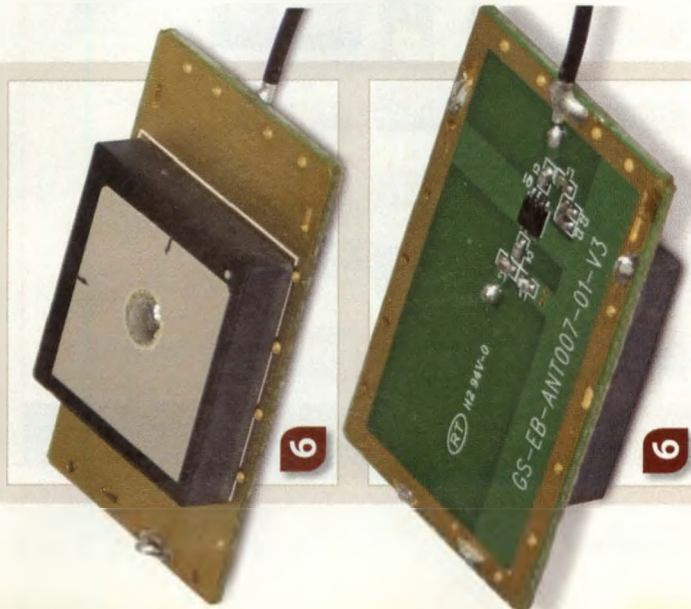
- 1 Front fascia.
- 2 LCD touch-screen: 3.5in TFT LCD, 65,000-colour, 240 x 320 high-resolution touch panel. Displays information and allows you to maintain items and execute menus by tapping the screen.
- 3 Button overlay: convenient key designs offer easy and accurate navigation in any environment.
- 4 Button daughter board: press these buttons to enable zoom in/out, mute mode, menu screen and turn on/off device.
- 5 Silver cover.
- 6 GPS sensitive antenna: built-in 18 x 18mm

ASUS S102 PND satnav device



- 7** Speaker: allows you to listen to music, the navigation voice and system warning.
- 8** Motherboard.
- 9** Rechargeable battery: 1400mAh, lithium-ion rechargeable battery.
- 10** Corner piece.
- 11** Rear fascia.
- 12** Stylus: used like a pen to tap LCD touch panel.
- 13** Screws to secure fascia.

THE BEST BITS



Are we there yet? the ASUS S102 PND's 18 x 18mm high-sensitivity antenna ensures a stable satellite signal reception — and provides precise navigation to get you where you need to be.



Photography features

Has Vista made life easier for photographers?

Helen Harris takes a snapshot.

WHAT'S COVERED

- The new features in Windows Vista for digital photographers, focusing on the built-in photo-editing and management tools. We'll also be looking at the disc-burning capabilities and integration with Windows Movie Maker, before finally considering whether these Vista add-ons are better than free third-party tools.

When Windows XP launched in 2001, digital photography was only just overtaking film, and while XP made it a lot easier to download photographs from your camera, the built-in photo tools were basic. Even with subsequent add-ons, you could view, rotate and print photos in XP, but that was about it. The fact that Apple bundled the superb iPhoto software with its machines further rubbed salt into the wounds. The good news is that Windows Vista does a lot more to appease photographers, though it remains to be seen how many keen snappers will upgrade their PCs for this reason alone.

PHOTO GALLERY

The new Windows Photo Gallery in Vista is, in essence, a one-stop space for importing and managing photos, with basic editing and disc-burning tools thrown in. Compared to the limited and disjointed photo-management tools in Windows XP, Photo Gallery is a big step forward.

Take photo storage and management for example, which required a lot of self-discipline in Windows XP. A new Import Pictures and Videos Wizard enables you to add keywords to photos — a god-send to parents who hoard lots of photos of their kids, then can't remember when and where the shot was taken. A "tag" system is used by Photo Gallery to add info to photos, and it's reasonably intuitive. When writing tags, remember that they are intimately linked with the new Vista search bar, located in the Start menu. So the more information you add to the tags, the quicker you can find your

HANDY TIP

The Windows Color System has an improved colour infrastructure and translation engine (CITE) to improve WYSIWYG colour fidelity. More specifically, it has a better colour processing pipeline with support for greater bit depths, multiple colour channels and alternative colour spaces. There's support for extended dynamic range and gamut colour space families. See <http://snipurl.com/1gmmb> for more details.

photographs from anywhere within Windows. There's also a search box within Photo Gallery.

Moving on, we were pleased to see that Vista has borrowed some tricks from third-party photo album software, a good example being the new star ratings system. You can rate your photos and then organise or search for photos based on the ones you like — though it's debatable how many shooters will bother with this, as the least favourite photos will most likely get deleted.

AUTO-FIX BLUES

Considering you can get excellent (and free) third-party photo management tools such as Google's Picasa, Microsoft has been wise to include some basic photo-fixing tools. Open up a photo and select Fix from the menu. Less-assured photographers will tend to apply the Auto Adjust tool before printing, for instance. While this is good to have, Auto Adjust tends to overdo the blue channel when fixing shots, adding a colour cast that can make things worse than the originals. It's easy enough to undo this, or manually make adjustments to the colour temperature, but it has to be said, the Auto Fix seems rather heavy-handed compared to similar tools in Picasa. Use Vista's Auto Adjust to salvage badly exposed or under-saturated shots and make more incremental adjustments with the Adjust Exposure and Adjust Colour tools.

Microsoft redeems itself by providing some better than average crop and red-eye tools. The new crop function is a revelation compared to the barely adequate tool you got with XP, and the Proportion pull-down menu gives you a fine degree of control over the cropping process. You can automatically crop according to popular print sizes, for instance, or make your own custom crops. Considering how many otherwise passable shots are ruined by poor cropping, we hope many photographers make use of this handy tool. To fix red-eye, you drag the cursor to draw a rectangle around the offending iris, and to pan while zoomed in, just press Alt and drag. Useful, but not

Welcome to the new look Photo Gallery. All the essential organisation, editing, sharing and printing tools are easily reached.





The printing wizard makes it easy to select print sizes or add tags. A huge improvement from Windows XP, and a real boon for all photographers.

Right-click on a picture and select Properties to access a high level of detail about a particular photograph in your collection.



essential, considering how many cameras now have automatic red-eye removal.

PRINTS AND THE REVOLUTION

Once you've sorted out your photographs and enhanced the exposure as required, the next job is to burn or print them — Windows Photo Gallery makes this very easy. Long-time XP users will delight in the fast, simple Burn button for copying photos to data disc or video DVD. The same goes for printing. Click Print and a wizard takes you through the process, giving you plenty of control over picture size. Again, a vast improvement over XP, and more confident users will appreciate the ability to adjust colour management settings via the Options settings. There are other ways of sharing photos, too. Click Email and Vista will automatically resize and convert the files for electronic transfer, which will be a huge relief to anyone whose inbox gets clogged with huge photo files from well-meaning relatives.

Besides the all-new Photo Gallery, Vista treats us to an overhauled version of Windows Movie

Maker, too. There's a link to this from within Windows Photo Gallery, and it will enable you to splice your stills together to create — you've guessed it — a movie. Of course, it's more like a slideshow than a proper movie, but some attractive effects, such as transitions, can be added to make your photo slideshow really stand out. Making slideshows is very easy with Windows Movie Maker too, with the Publish To option at the side making it a cinch to burn slideshows to disc or email them.

PHOTO FINISH

It's good to see that photography is taken much more seriously in Windows Vista, and that the Photo Gallery is now one of the first things you see on the new Look Start menu. It's certainly become a lot easier to keep on top of your photos, share them with friends or family, or print them out. That said, we certainly don't think that the new Gallery is a killer app for Windows Vista, or a sole reason to upgrade from XP. Photographers who choose to stick with

HANDY TIP

Right-click on a photo in Photo Gallery and the Properties box gives a good chunk of EXIF data (technical information about the image). The box reveals key settings such as image size, aperture width, shutter speed and ISO (light sensitivity setting). This information enables more serious photographers to examine why a certain shot worked (or not) and make the necessary manual adjustments to their camera.

Windows XP can get just as good — if not better — versions of the Photo Gallery tools for free in a program like Picasa, or Adobe Photoshop Album Starter Edition. In fact, Picasa appears to have even more powerful photo organisation tools and more subtle photo-fixing features; it's also got a great selection of effects and filters that rival those you get in a commercial editing suite, so in many ways, it hits Vista's Photo Gallery into the weeds.

The only real drawback with Picasa is the lack of integrated disc burning tools, but most PC users will usually have some free burning software knocking about. Rather than a rival to Picasa, it's probably more useful to regard Photo Gallery as a Windows catch-up to Apple's iPhoto, and it's certainly a reasonable alternative if you don't want the hassle of switching to Mac OS X. Photo Gallery's interface is logical and well designed, and depending on the specification of your PC, it runs very quickly, too. The lack of Vista drivers for certain digital cameras is not a major problem either, as we would recommend you get a memory card reader to download your shots anyway — plugging in the camera every time you want to copy over photographs is still a laborious, fiddly process that drains your camera batteries and increases the risk of images corrupting as they copy over. Most casual photographers will be quite happy with the new, improved photo support in Vista: just treat that Auto Fix tool with caution. **ETC**



THE MORE INFORMATION YOU ADD TO THE TAGS, THE QUICKER YOU CAN FIND YOUR PHOTOGRAPHS ANYWHERE IN WINDOWS

SPOTLIGHT ON...

EXPOSURE

The image-editing tools in the new Photo Gallery are a big improvement on XP, but need to be treated with some caution. We found the Auto Adjust tool gave some photos a distinct blue cast. Auto Adjust is OK for a quick fix, but we would recommend you compensate for under or overexposure on your shots by using Adjust Exposure and Adjust Colour. Compared to Photoshop Elements or Paint Shop Pro, the Adjust Exposure tools are quite basic. You get simple sliders for adjusting brightness and contrast. Adjust the image until you're happy with it,

and Photo Gallery automatically saves the changes. Then do a test print. If it looks quite different from what you see on screen, your screen — or printer — needs calibrating. Recalibration is a complex topic, but you can try doing it yourself with specialist software (such as DisplayMate, www.displaymate.com) or hardware, such as the ColorVision Spyder Suite (www.colourconfidence.com). The Adjust Colour tools are more comprehensive — and handy for boosting saturation or reducing overheated colour temperature.



Inside Vista security

Make your PC secure and protect your kids with Vista's advanced features.

Jon Thompson shows you how.

REQUIREMENTS

● WINDOWS VISTA

Any version of Vista will do — we've taken care not to focus on features exclusive to the more expensive and Ultimate versions.

● FLOPPY DISK OR USB STICK

These will be used for password recovery.

INSIDE INFO

- To access Vista's official help, go to the start menu and select Help and Support > Security and Maintenance.
- For Microsoft's free online Windows Vista Security Guide: www.microsoft.com/technet/windowsvista/security/guide.mspx
- For help with a specific problem: <http://thevistaforums.com>
- Vista forum at Annoyances.org: www.annoyances.org/exec/forum/winvista

Love or loathe it, Windows XP has evolved into a fairly stable operating system, so why upgrade to a resource-hungry giant like Vista? One very good reason is the advanced security it offers. This should make things uncomfortable for hackers, and it also helps you to decide what's acceptable for younger users to do and see. We'll show you how to set up your PC to do just this — and introduce you to other security aspects of the operating system you might not know about.

TAKING CONTROL

Vista's user account control subsystem (UAC) prevents people installing potentially damaging software. So, before we begin, it's worth knowing that UAC is active all the time. Here's an example.

When you installed Vista, you created an initial account — this is an administrator account. If it's the one you're logged into and it's the only administrator account you've set up, open the control panel then select 'User Accounts and Family Safety'. Click on 'User Accounts' and you see two sets of options: one for your account, one for others. Select 'Change Account Type' and press 'Continue' on the resulting UAC warning pop-up. If you're logged into your only administrator account, Vista realises this and will not let you downgrade to being a normal user.

Let's now create a normal user account, without administrator powers. Return to the previous screen with the back arrow button and click on 'Manage Another Account'. Click on 'Create a new account' and enter a name. Now,

making sure the radio button for a standard user is selected, press the 'Create Account' button.

The screen shows each account, including the new one. Click on it and you'll see a set of options for managing it. To set up restrictions, click on 'Set up Parental Controls'. The screen now displays both accounts (yours and the new one). Click on the new account and set parental controls to 'On, enforce current settings'. Click on 'Windows Vista Web Filter' to restrict web access. For finer control, press the custom radio button to see individual options.

From the parental controls screen you can decide when the account can log in. Click on the Time Limits option, then the hour-long squares to toggle between allowed and forbidden for each day. With the Games option, you can decide a maximum parental rating for games that will run under the account, or block specific games. Similarly, you can block specific programs from the list of those already installed.

HANDY TIP

Vista's User Access Control mechanism will challenge you when you try to install a program or perform a privileged operation, such as altering system settings or making changes to sensitive registry entries. It will do this even under an administrator account to give you time to reflect on your actions. Use this chance wisely and you could save yourself a lot of bother later on. If you're installing a dodgy download, you may be opening your system to something nasty.



The control panel's security options are a common starting point for configuring security in Windows Vista.

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AFTER THE
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1 - 31 May 2007

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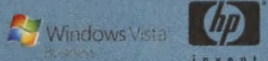


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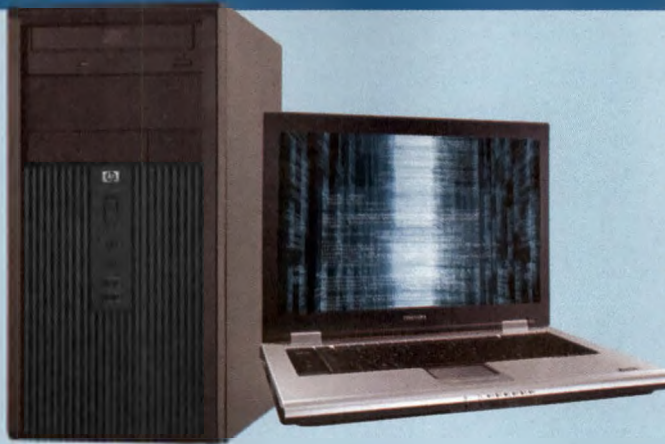
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- DVD SuperMulti ±Dual Layer Drive
- **15.4" WXGA Widescreen**
- nVidia GeForce Go 7300 with 128MB
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Weighs 2.8kgs
- Windows Vista Business
- 1 year warranty

\$1899

U5351 | RENT \$21.29/wk*

ULTIMATE POWER WITH DEDICATED GRAPHICS



nx8420



- Intel Core 2 Duo T7200 2GHz
- 1GB DDR2 RAM
- 120GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- **15.4" WXGA Widescreen**
- ATI Mobility Radeon X1600 with 256MB
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Weighs 2.7kg
- Windows Vista Business
- 1 year warranty

\$2299

U4577 | RENT \$24.93/wk*

POWER OF A DESKTOP, PORTABILITY OF A NOTEBOOK



TravelMate 5625WSMi

acer

- Intel Core 2 Duo T7200 2GHz
- 2 x 1GB DDR2 RAM
- 200GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- **17" WXGA Widescreen**
- nVidia GeForce Go 7300 with up to 256MB TurboCache
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Integrated 1.3 megapixel Orbicam
- Windows Vista Business

\$2499 BEFORE CASHBACK
YOU PAY \$2598

U5958 | RENT \$28.17/wk*

Brilliant Value \$99 19" Widescreen LCD Monitor³

Purchase select Lenovo Notebooks and be eligible to purchase a 19" Widescreen LCD Monitor for \$99. Only one monitor per notebook. \$99 | U5751



optional accessories

HP Docking Station for nx series
\$295 | T7178



1GB DDR2-667 RAM for HP Notebooks
\$229 | T7407

optional accessories

1GB RAM Upgrade for Acer TM5625WSMi
\$229 | U5797



Harris Technology 3 Year Extended Warranty Plan - Protect your investment for peace of mind!
\$239 | S0601 (Up to \$2000 notebook)
\$289 | S0602 (Up to \$4000 notebook)

Desktop & Display

Great value Desktop and Display offers...

Apple iMac 20"



Authorised
Solutions Reseller

- Processor: Intel Core 2 Duo 2.16GHz Dual-Core
- Memory: 1GB DDR2 II SDRAM
- Hard Drive: 250GB* SATA Drive (7200RPM)
- Optical Drive: Slot load 8x Double Layer DVD±RW Superdrive
- Operating System: Mac OS X v10.4 Tiger
- Display: 20" widescreen LCD with 1680 x 1050 resolution
- Warranty: 1 year limited



\$2299

A7340 | RENT \$24.93/wk

AT3220B LCD TV



- AT3220B: 32" (80cm)
- Resolution: 1366 x 768
- Brightness: 500 nits
- Contrast ratio: 1200:1
- Response Time: 8ms
- Weight: 17.7kg
- HDMI Input
- HD TV ready



HOT PRICE

\$949

A7460 | RENT \$10.98/wk

*See page 16 for Rentsmart terms & conditions

#Available capacity of hard drive may be less due to preinstalled software.

¹Purchase any advertised Toshiba projector until 31/05/07 and receive cashback of \$120 via redemption directly from Toshiba. Visit toshiba.ht.com.au for redemption form and full terms and conditions. Postage charges may apply

²Engin bonus via redemption only from engin.ht.com.au Terms & conditions & postage charges may apply.

6 SMART REASONS TO RENT

Affordable monthly repayments
Save your money
Tax deductible
Always have the latest equipment
Get more equipment
Fast approval



AL1916WD



- Viewable Image: 19" Wide
- Interface: Analogue & Digital
- Resolution: 1440 x 900
- Response Time: 5ms
- Contrast Ratio: 700:1
- Brightness: 300 nits
- Warranty: 3 years limited



\$335 | U4521

J115 Microtower



- Processor: AMD Athlon 64 X2 3800+ Dual Core
- Memory: 1GB (2 x 512MB) DDR2
- Hard Drive: 250GB* SATA (7200RPM)
- Optical Drive: 16x Dual Layer DVD+/-RW
- Operating System: Microsoft Windows Vista Business
- Warranty: 1 year limited onsite



Windows Vista
Business

\$999

S9366 | RENT \$11.56/wk*

optional accessories

Logitech Harmony
Advanced Universal
Remote 1000i
\$699 | U5173



P8 DLP Projector



- Resolution: XGA
- 1500 ANSI Lumens
- Contrast ratio: 2100:1
- Weight: Compact 1kg
- Perfect combination: extremely mobile and bright
- Includes soft carry case and remote
- Warranty: 3 year limited



ULTRA LIGHT & PORTABLE

\$120 CASHBACK OFFER¹

\$2499

T3878 | RENT \$27.10/wk*

206BW



- Viewable Image: 20" Wide
- Interface: Analogue & Digital
- Resolution: 1680x1050
- Response Time: 2 ms
- Contrast Ratio: 3000:1
- Brightness: 300 nits
- Vista Certified
- Warranty: 3 years onsite exchange and zero dead pixel policy



VISTA CERTIFIED

\$529 | U5892

Microsoft Wireless Optical Desktop
2000 | \$99 | T9770



TLP-X2000 LCD Projector

- Resolution : XGA
- 2000 ANSI Lumens
- Contrast ratio: 400:1
- Weight: 2.8kgs
- Quick start & shutdown function
- Password security & control panel lock
- Includes remote with laser pointer
- Warranty: 3 year limited

TOSHIBA



\$120 CASHBACK OFFER¹

\$1879

T8677 | RENT \$21.07/wk*

J110 Microtower

- Processor: Intel Core 2 Duo E6300 Dual Core
- Memory: 1GB (2 x 512MB) PC4200 DDR2
- Hard Drive: 250GB* SATA (7200RPM)
- Optical Drive: 16x Dual Layer DVD+/-RW
- Operating System: Microsoft Windows Vista Business
- Warranty: 1 year Limited onsite

\$1199

S9367 | RENT \$13.87/wk*



lenovo

HT EXCLUSIVE



DX2250 MicroTower

- Processor: Athlon X2 3800+ Dual Core
- Memory: 1GB DDR2 (2 x 512MB)
- Hard Drive: 160GB* SATA (7200RPM)
- Optical Drive: 16x Dual Layer DVD+/-RW
- Operating System: Microsoft Windows Vista Business
- Warranty: 1 year limited onsite



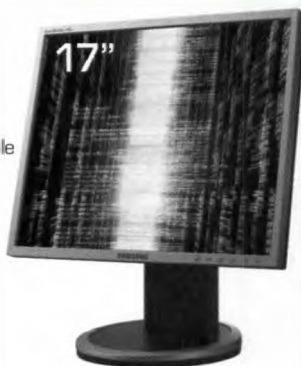
BONUS \$99 INTERNET PHONE STARTER KIT²

\$1049

U5715 | RENT \$12.14/wk*

740B

- Viewable Image: 17"
- Interface: Analogue & Digital
- Resolution: 1280x1024
- Response Time: 5ms
- Contrast Ratio: 600:1
- Brightness: 300 nits
- Stand: Pivot & Height Adjustable
- Warranty: 3 years onsite exchange and zero dead pixel policy



\$320

BLACK | U6599
SILVER | U6600

VT-490 LCD Projector

- LCD Technology
- SVGA resolution
- 2000 ANSI Lumens
- Contrast Ratio: 600:1
- Wall colour correction
- Compact: 2.9kg
- Security function
- Quick start and power off function
- Includes soft carry case and remote
- 2 years limited warranty

\$1199

U1309 | RENT \$13.87/wk*

NEC



optional accessories

Toshiba Projector Screen 92" 16:9 Pull Down
\$459 | S9637



Neo-Flex Notebook/Projector Lift Stand
\$119 | U6591



Logitech USB Desktop Microphone
\$48 | H8689

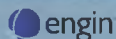


Logitech Premium USB Headset 350
\$69 | R7934



Keep in touch...

Voice Box Series 3



The ultimate box

- All in one unit allowing you to connect multiple devices such as PCs and notebooks wirelessly to broadband
- ADSL2 plus modem
- Allows you to run two phone lines
- Ideal for the modern home or office



Save up to 55% on your phone bill!
Connect your existing home or office phone through your broadband internet service.

\$249 | T7230

DSS7960+1
Dual Line Phone

Uniden
SOUNDS BETTER

- Distinctive caller ID indicators
- Digital duplex speakerphone on handset
- 2 line dual keypad cordless phone
- 5.8GHz digital spread spectrum technology phone system
- Multi (10) handset capable (2 handsets included)



BONUS Headset

\$269 | U4664

Uniden HS910 Headset | \$29.95 | U0574

* Purchase any GPS Powered by Whereis from April 1st 2007 until May 31st 2007 and receive \$50 cashback via redemption from Sensis. Visit sensis.ht.com.au for further details. Postage charges may apply.

* Refer to back page for Rentsmart terms & conditions.

DID YOU KNOW

You can now quickly search for and order our entire range of more than 15,000 technology products online at ht.com.au.

Click and try it out today.

\$50 cash back offer
on GPS units¹

powered by
Whereis

GNS8350 GPS Navigation

Uniden

- High definition 3.5" LCD display
- Simple & easy to use touch control screen
- Easy to navigate maps
- Unique night mode for easy glare free view



\$499 BEFORE CASHBACK
YOU PAY \$549¹
U0576

\$50 cash back offer
on GPS units
Whereis

Treo 680

palm

Bring wireless mobile productivity to your small business with the all-in-one Palm® Treo™ 680 smartphone. It delivers full phone functionality plus wireless email, web browsing, messaging, document editing and more. Give your company a productivity boost and realise a quick return on investment with the Treo 680 — the ideal device for your growing business.



\$799

U4259 | RENT \$9.24/wk*

Optio E30 Digital Camera

PENTAX

An entry-level model designed with the convenience of beginners in mind

- 7.1 megapixels
- 3x optical zoom
- 15 shooting modes
- 4x digital zoom
- 2.4" LCD screen



\$199 | U6157

7.1 MEGAPIXELS 3x OPTICAL ZOOM 2.4" LCD SCREEN MOVIE

Digiwalker A701 Phone/
PDA/GPS

Mio
Digi Walker

- Intel® PXA-270 520MHz
- Memory: 128 MB Nand Flash / 64 MB SDRAM
- GSM Tri Band GSM/GPRS
- GPS Built-in GPS module
- SiRFStar III chipset
- SD/MMC SD/IO, MMC-compatible
- Video Display 2.7"
- Touchscreen TFT LCD
- Resolution: 320 x 240, 65K Colours, Portrait
- Connectivity USB 1.1, Bluetooth® 1.2
- Camera Fix Focus 1.3 MP CMOS



\$1049 BEFORE CASHBACK
YOU PAY \$1099¹
U4702 | RENT \$12.71/wk*

\$50 cash back offer
on GPS units
Whereis

2070 USB Phone

FreshTel
internetphone

- Free Firefly to Firefly calls worldwide
- Free personal Voicemail
- Includes headset
- 128MB memory
- Can be used at internet cafe
- Perfect for travelling



SAVE \$10

\$39 | U0521

FE-240

OLYMPUS

World's smallest and thinnest 5x optical zoom lens camera with a 38-190mm range

- 7.1 megapixel
- 5x optical zoom lens
- Slim stainless steel body
- 13 optimised scene modes
- Large 2.5" LCD screen



\$399 | U5436

7.1 MEGAPIXELS 5x OPTICAL ZOOM 2.5" LCD SCREEN MOVIE

SBS Server Bundle Proliant ML110G4



- Dual-Core Intel Pentium D Processor 820 2.8GHz-800Mhz-2x1MB L2 Cache
- 2 x 160GB Non Hot Plug SATA Hard Disk Drive
- 1GB PC2-530a0 ECC (DDR2-667Mhz) Memory
- Embedded 4 Port SATA Controller with embedded RAID
- 48x CD_ROM
- Microsoft Windows Small Business Server Standard Edition R2

\$1695

U3865 | RENT \$19.00/wk*



Terastation Pro II NAS 1TB Business Server Edition

BUFFALO

- Ultra-fast data transfer rates of up to 35MB/s - more than twice the speed from TeraStation PRO
- Distributed file system support- allows multiple TeraStation to work seamlessly together as one unit



\$1799

U5985 | RENT \$20.17/wk*

NEW

Google Mini Hardware Search Appliance

Google

The Google Mini is an integrated hardware and software solution designed to help your organization make the most of its digital assets. It does this by delivering the power and productivity of Google search across your documents and websites - quickly, easily and affordably. The new smaller, faster Mini includes support for multiple document collections, search across file servers and improved reporting.

\$4259

T8261 | RENT \$43.49/wk*



Netgear SC101T Storage Central Turbo

NETGEAR

- Gigabit Ethernet network port, enables transfer of large files in seconds
- Accommodates 2 SATA drives (not included)
- Creates duplicate copies of your files automatically
- Supports SATA drives from 80GB to 1500GB
- Ensures maximum protection against data loss
- Supports additional Storage Central Turbo systems



\$399

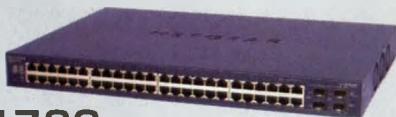
U6714

NEW

Netgear GS748TS 48 Port Gigabit Stackable Smart Switch

NETGEAR

- Gigabit Stackable Smart Switch enables businesses to grow with ease
- 48 10/100/1000Mbps ports
- Stack up to six units and 288 ports and manage them all from a single IP address



\$1799

U4731 | RENT \$20.17/wk*

Linksys 24 Port 10/100/1000 Gigabit Switch SR2024

LINKSYS

- Twenty-four 10/100/1000Mbps, half/full duplex, switched ports, and two Mini-GBIC expansion ports
- Forwards and filters packets at non-blocking, full wire speed
- All ports have auto speed negotiation and auto MDI/MDI-X crossover detection
- Linksys reliability and limited lifetime warranty



\$699

M5854 | RENT \$8.09/wk*

Linksys NSS4100 Network Storage System Chassis 1.0TB RAID

LINKSYS

- 4 Drive Bay Network Storage System Chassis Supporting RAID 0/1/1+Spare/5/5+Spare/10 and File Encryption Support (Preconfigured RAID 5)
- Advanced Data Protection & Security Features



\$3639

U6722 | RENT \$38.00/wk*

NEW

optional accessories

D-Link DGS-1008D 8 Port 10/100/1000 Un-Managed Switch
\$152 | K8853

D-Link DWL-2100AP XtremeG Wireless b/g Access Point
\$199 | N6053

optional accessories

Network Installation - Standard Pack
\$162 | U5900

Server Installation - Microsoft Server 2003
\$810 | U5898

optional accessories

Netgear WNR834B RangeMax NEXT Wireless Router
\$255 | T7507

Linksys WRT300N Wireless N Broadband Router + 4 Ports Switch
\$247 | T7735

Computer Accessories

HT has all your computer peripheral needs covered

**Voyager 510SL
Bluetooth Headset System**

- Convenient One-Touch Control button allows you to seamlessly switch between your office phone and your voice enabled Bluetooth® mobile phone, PDA or laptop
- Noise-cancelling microphone for superior voice transmission
- Up to 6 hours of talk time and up to 100 hours of standby time
- Smart technology knows which device you are using- enabling you to take calls from either device.

**\$299** | T2548**Premium Notebook
Headset**

- Behind-the-head, USB/analogue headset optimised for notebooks
- Adjustable earpieces for a comfortable, secure fit
- Rotating, adjustable, noise-cancelling microphone
- Convenient in-line volume and mute control located on cable

**\$99** | U1277

*See page 16 for Rentsmart terms & conditions

*20% cash back offer is valid from 01/05/07 to the 31/07/07 on selected Microsoft Hardware Products, see microsoft.ht.com.au for full terms & conditions. Postage charges may apply.**DID YOU KNOW**

You can now quickly search for and order our entire range of more than 15,000 technology products online at ht.com.au.

Click and try it out today.

**Wireless Notebook
Presenter Mouse 8000**

- Smoothly navigate through MS Office, PowerPoint & other presentations from up to 9m away from the PC
- Use Media Remote for multimedia presentations & control digital entertainment

**20% CASHBACK OFFER¹****\$149** | U4249**Bluetooth Laser Cordless
Desktop MX5000**

- The smart desktop that combines an LCD keyboard display, high-speed Bluetooth wireless hub with SecureConnect technology
- Comes with innovative touch-sensitive media controls

**\$245** | T3579**diNovo Media Bluetooth
Laser Desktop**

- Bluetooth MediaPad — long range Bluetooth remote commander
- Combines a numeric pad, calculator & remote control
- LCD display and rechargeable MX Laser mouse

**\$329** | T3582**8GB USB Flash Drive**

- Hi-Speed USB 2.0
- Mac and PC compatible
- True Plug and Play no drivers needed
- Utility program for password security and partitioning functions
- LED to indicate read/write status

MASSIVE 8GB CAPACITY**\$199** | U5794**Cruzer Micro U3 4GB
USB Drive**

- U3 smart enabled
- Hi-Speed USB 2.0 certified (backwards compatible with all USB 1.1 ports)
- Retractable USB connector
- U3 functionality only supported on Windows 2000 (SP4 and later) & XP OS

**HOT PRICE****\$94⁹⁵** | T8460**2GB Micro SD Memory
card**

- Universal compatibility with TransFlash™ memory card slots
- Comes bundled with an SD Adapter for use with microSD or TransFlash cards
- Built-in security features enable users to download, store, and play secure content just like an SD card

**\$59⁹⁵** | U3749**internal hard drives**

**Seagate Barracuda
320GB PATA**
\$165 | U0004



**Seagate Barracuda
320GB SATA**
\$170 | T9020



500GB Gigabit/Ethernet Hard Drive



- Gigabit Ethernet & USB2.0 interface
- Quick & easy IP configuration
- Expandable capacity through a USB host port
- Users 7 share level permissions
- Jumbo Frame support



\$499 | U4961

One Touch III 1TB Turbo External Hard Drive



- User-configurable RAID solution
- RAID 0 for high performance disk striping or RAID 1 for auto-mirroring
- Fast Data transfer - FireWire 400 and 800 and USB 2.0
- 7200RPM. 16MB cache
- Maxtor Drivelock protection



\$799 | T4613

My Book Pro 1TB External Hard Drive



- 1,000 GB of storage
- USB 2.0/Firewire 400/ Firewire 800
- Capacity gauge
- Raid
- EMC® Retrospect® Express Backup and System Recovery Software

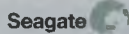


SAVE \$50

\$699

U5601 | RENT \$8.09/wk*

FreeAgent 320GB Desktop Drive



- Footprint is no bigger than a stapler
- 5-year limited warranty
- Just plug it in and you're ready to go
- USB 2.0 interface
- PC and Mac compatible



NEW

\$229 | U6879

Basics 500GB External Hard Drive



- Store your work, photos, songs, and digital videos safely and securely
- Ideal for the office and home PC with easy installation via USB cable
- Includes vertical stand



SAVE \$30

\$299 | U6197

Porsche Design 500GB External Hard Drive



- Hi-Speed USB connection
- 7200 RPM 8MB Cache
- Save photos, MP3s, data files
- Stackable to save desk space
- Back up valuable information



HOT PRICE

\$299 | T9416

One Touch III 320GB External Hard Drive



- USB 2.0 and Firewire
- 7200RPM 16MB cache
- Maxtor "OneTouch" button for easy backup of your data
- 2 Levels of security with Maxtor DriveLock & Encryption



NEW

\$299 | U5223

My Book Essentials 250GB External Hard Drive



- Easy to set up, easy to use, plug it into your computer's USB 2.0 port and start saving.
- Intelligent drive management features — The My Book drive turns itself on and off with your computer



LOW PRICE

\$149 | U5597

160GB External Portable Hard Drive



- Large 160GB storage capacity
- Hi-Speed USB 2.0
- 4 pin USB, 5400 rpm, buffer: 2MB
- Ultra portable slim design
- Sturdy metal casing



HOT PRICE

\$189 | U4680

desktop accessories

Logitech V270 Cordless Notebook Mouse

\$89.95 | T3577



Logitech Cordless 2.4 GHz Presenter

\$99 | S8331



MX Revolution Cordless Laser Mouse

\$159 | T9986



HOT PRICE

Printers

All your printing needs covered..

N6010



HP WARRANTY BONUS¹

Quickly and easily digitise office filing cabinets and organise scans.

- Fast, unattended duplex document scanning at up to 18ppm
- Optical scanning resolution: up to 600 dpi
- Bit depth: 48-bit
- Gray scale levels: 256

\$999

U5394 | RENT \$11.56/wk *

¹ **HP Warranty Bonus**
BONUS 2 years warranty upgrade on selected HP Scanjet Scanners. HP gives you this SMART BUSINESS BONUS with the purchase of your eligible scanner before the end of May 2007. To claim your bonus warranty simply visit hp.ht.com.au for full terms and conditions.

² BONUS 4 colour toner set valued at \$279 on purchases of the Samsung CLX-3160 from 01/05/07 to 30/06/07. See samsung.ht.com.au for full details.

³ Cashback via redemption from Epson from 01/05/07 to 31/07/07. See epson.ht.com.au for details.

⁴ Offer valid on purchases between 01/05/07 to 30/06/07. Visit hp.ht.com.au for more details.

⁵ Cashback offer via redemption from Canon from 01/05/07 to 15/07/07. See canon.ht.com.au for details.

⁶ Offer valid on purchases between 01/05/07 to 30/06/07. Visit hp.ht.com.au for more details.

⁷ Cashback via redemption from Brother from 01/05/07 to 30/06/07. See brother.ht.com.au for details.

⁸ Via redemption from HP between 01/05/07 to 30/06/07. See hp.ht.com.au for details.

¹ Refer to back page for Rentsmart terms & conditions.

Postage charges may apply on all redemptions.

CLX-3160FN

SAMSUNG

- Printer/copier/scanner/fax
- Print & copy speed: up to 16ppm
- Print Resolution: up to 2400 x 600 dpi
- Scan Resolution: 600 x 1200 dpi
- Standard Media Capacity: 150 sheets
- Connection: hi-speed USB, Ethernet 10 Base-T/100 Base-TX
- Warranty: 1 year onsite

BONUS toner set valued at \$279²

\$1099

U6220 | RENT \$16.23/wk *



Stylus RX650

EPSON

- Printer/copier/scanner
- Print & copy speed: up to 21 ppm mono/colour
- Print Resolution: up to 5760 x 1440 dpi
- Scan Resolution: 3200 x 6400 dpi
- Standard Media Capacity: 80 sheets
- Connection: USB, IrDA
- 2.5" display
- Warranty: 1 year

\$130 CASHBACK³

\$319 | T5919

BEFORE CASHBACK YOU PAY \$449



Pro K5400DTN



- Print speed: up to 36ppm mono/ 35ppm colour
- Print Resolution: 4800 dpi colour
- Duplex (dual sided) printing
- Total Media Capacity: 600 sheets
- PCL 3 support
- Extra paper tray (total paper holding 600pg)
- Connection: hi-speed USB, Ethernet 10 Base-T/100 Base-TX

\$100 CASHBACK & 30 Day Money Back Guarantee⁴

\$299

U7751

BEFORE CASHBACK YOU PAY \$399



MFC665CW

brother

- Printer/copier/scanner/fax
- Print speed: up to 20ppm (mono) / up to 18ppm (colour)
- Scan Resolution: 600 x 2400 dpi
- Standard Media Capacity: 100 sheets
- Memory: 16MB
- Connection: USB, Ethernet 10 Base-T/100 Base-TX, IEEE 802.11b, IEEE 802.11g
- Warranty: 1 year

\$299 | U5346



MP830

Canon
advanced simplicity

- Printer/copier/scanner/fax
- Print Speed: up to 30ppm (mono) / up to 24ppm (colour)
- Print Resolution: up to 600 x 600 dpi (mono) / up to 9600 x 2400 dpi (colour)
- Scan Resolution: 2400 x 4800 dpi
- ADF & built in duplex
- Standard Media Capacity: 300 sheets
- Warranty: 1 year

\$399

T6987

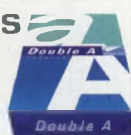
BEFORE CASHBACK YOU PAY \$499



\$100 CASHBACK⁵

optional accessories

Double A A4 White 80gsm
500 page ream
\$6.49 | T4776



optional accessories

Double A A4 White 80gsm
2500 page box
\$31.90 | T4779



Colour LaserJet CM1017



- Printer/copier/ scanner
- Print Speed: up to 8ppm mono & colour
- Print Resolution: up to 600 x 600 dpi
- Scanning Resolution: 1200 x 1200 dpi
- Connection: hi-speed USB, Ethernet 10 Base-T/100 Base-TX
- 6-in-1 card reader
- Warranty: 1 year onsite warranty

\$100 CASHBACK⁶



\$1049

U0877 | RENT \$13.29/wk*

BEFORE CASHBACK YOU PAY \$1149

Colour LaserJet 2840



- Printer/copier/scanner/fax
- 7-in-1 card reader
- Print speed: up to 19ppm mono/4ppm colour
- Print Resolution: up to 600 x 1200 dpi (mono)/ up to 600 x 600 dpi (colour)
- Scan Resolution: 1200 x 1200 dpi
- Connection: hi-speed USB, Ethernet
- Warranty: 1 year onsite
- Windows and Mac compatible

\$1399

S1217 | RENT \$15.69/wk*



BONUS COLOUR TONER PACK⁸

Laserjet 3055 All in One



- Printer/copier/scanner/fax
- Print speed: up to 18ppm
- Print Resolution: up to 1200 x 1200 dpi
- PCL 5e, PCL 6, PostScript 3 support
- Scan resolution: 600 dpi
- Hi-speed USB, Ethernet
- Warranty: 1 year

\$100 CASHBACK⁶



\$649

T4390 | RENT \$8.66/wk*

BEFORE CASHBACK YOU PAY \$749

MFC-9420CN



- Printer/copier/scanner/fax
- Print & Copy Speed: up to 31ppm mono/8 ppm colour
- Print Resolution: up to 600 x 600 dpi (mono)/up to 600 x 600 dpi (colour)
- Scan Resolution: 1200 x 2400 dpi
- Standard Media Capacity: 250 sheets
- Connection: Parallel, hi-speed USB, Ethernet 10 Base-T/100 Base-TX
- Warranty: 1 year onsite

\$999 BEFORE CASH BACK
YOU PAY \$1298

T4070 | RENT \$15.02/wk*



\$299 CASHBACK⁷

Docuprint C525A



- Print Speed: up to 25ppm, mono / 5ppm, colour
- Print resolution: 600 x 600 dpi
- Total Media Capacity: 200 sheets
- Connectivity: parallel, USB, Ethernet
- Memory: 64MB
- Monthly Duty Cycle: 45000 pages
- Warranty: 1 year



\$399 | R6445

CLP-300N



- Print Speed: up to 16ppm mono A4/4ppm colour
- Print Resolution: 2400 x 600 dpi
- Total Media Capacity: 150 sheets
- Memory: 64 MB
- Connection: USB, Ethernet
- Warranty: 1 year on site

\$499

U0104



Colour Laserjet 2605DN



- Print Speed: up to 12ppm mono/10ppm colour
- Resolution: 600 x 600 dpi
- Memory: 64MB (expandable 320MB)
- Total Media Capacity: 250 sheets
- Connection: hi-speed USB, Ethernet 10/100Base-TX
- Duplex/Networked
- Monthly Duty Cycle: 35000 pages
- Warranty: 1 year

\$679 | T7115

RENT \$9.01/wk*

BEFORE CASHBACK | YOU PAY \$779



\$100 CASHBACK⁶

optional accessories

Ink for the MFC-665CW Printer



Ink	Part No.	Price
LC-57 BLACK	U1087	\$31
LC-57 CYAN	U1088	\$17
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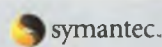
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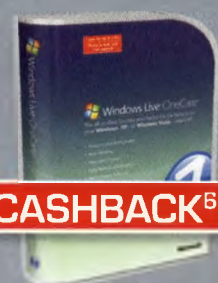
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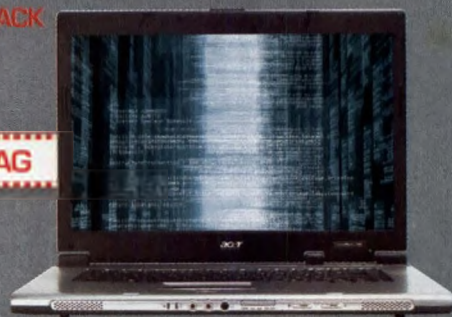
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¹See page 4



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See page 12



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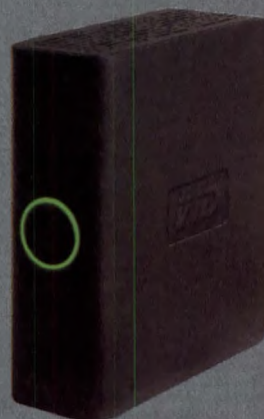
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See page 11



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3 WAYS TO SHOP **CALCULATE VISIT**

SPOTLIGHT ON...

TRUSTWORTHY COMPUTING

Vista is the first major product of Microsoft's Trustworthy Computing initiative. In an email sent to all permanent staff in 2002, Bill Gates declared that: "Trustworthy Computing is computing that is as available, reliable and secure as electricity, water services and telephony."

The concept of Trustworthy Computing has quickly become a company-wide initiative whose basic tenets were fleshed out in a 2002 white paper. This explained the concept in terms of four pillars: security, privacy, reliability and business

integrity. More than simple passwords and anti-malware software, security also means working with law enforcement to bring cyber-criminals to justice.

Privacy in Windows Vista is embodied by the BitLocker encryption technology shipped with some versions of the operating system. Microsoft rightly attracts flack for its reliability, but the company hopes the fourth pillar, business integrity, will help to correct that by providing timely fixes when problems do arise.



ONE VERY GOOD REASON TO UPGRADE TO WINDOWS VISTA IS THE ADVANCED SECURITY IT OFFERS

By clicking on 'view activity reports', you can see exactly what the user of this account has been up to.

FIREWALL SETUP

Sometimes you'll need to allow programs through the firewall. Under the Security section of the control panel, click on 'Windows Firewall'. In the left panel of the resulting window is an option to allow a program through. Select this and another window pops up showing the list of programs and ports already granted access. Click on the button marked 'Add program...'. Now double-click an installed program in the list and the firewall will grant it free passage through the firewall.

You can also limit a program's connection privileges on this window. Highlight the program and press 'Change scope...'. The options allow the program to contact any computer anywhere on the internet, only those on your local network, or a list of specific IP addresses. To open a specific port in the firewall, press 'Add Port...' then enter a name for the protocol and the port number, and choose between TCP and UDP traffic.

COMMUNITY DEFENCE

Windows Defender, Microsoft's new anti-malware subsystem, carries out a daily full system scan, which you can customise in a number of ways. From the control panel, go to Security > Windows Defender > Tools > Options. The new window gives you a wide set of configuration options to play with. Most settings are OK on their default setup, but you may like to adjust the time at which Defender does a full system scan to a time convenient for you.

Once a threat is identified, Defender takes automatic action. Severe threats, such as worms and viruses, are always silently removed, but unclassified threats cause Defender to ask for advice. If you recognise the software, let it run, but if you're not sure, the

pop-up tells you how other members of the Microsoft SpyNet community responded to the same situation.

It's also worth pointing out that — just as with XP — you'll need to install a dedicated antivirus program.

UNDER THE HOOD

There are security measures hidden away in the depths of Vista, too. Of these, Address Space Layout Randomisation (ASLR) is a major advance in the fight against a hacking technique called the buffer overflow attack.

In a susceptible piece of software, a buffer overflow allows a remote attacker to cause a PC to execute code they place into the storage area of a subroutine. Worms often use this as an infection mechanism.

Such attacks rely on vulnerable software always loading to a predictable point in RAM. With ASLR, however, each program loads into one of 256 different random locations, making, Microsoft hopes, buffer overflows immensely difficult to get right.

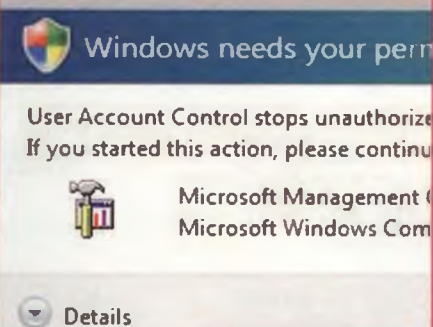
For extra protection, programmers can now also set a flag in the headers of their programs to take advantage of ADLR. What's more, if the operating system itself detects a buffer overflow in progress, it instantly kills the running process just to be on the safe side. **BT PC**

DO THIS...

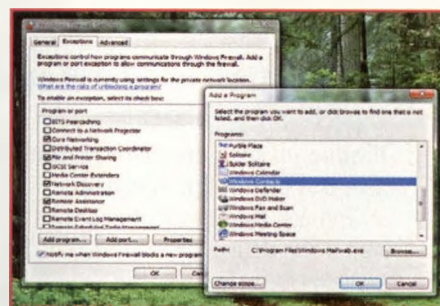
When you create a user account, you don't need to set a password, but failing to do so can undermine all your security setup efforts. To overcome this, set a password on each new account as follows. As an administrator, open the control panel and select 'User Accounts and Family Safety'. Now, select 'User Accounts' followed by 'Manage another account'. Select the account you wish to add the password to and click the resulting option to do just that.

SET PASSWORDS

User Account Control



The screen goes dark and the UAC pop-up appears whenever you attempt to perform a privileged operation. Use this warning wisely and it could save you a lot of bother.

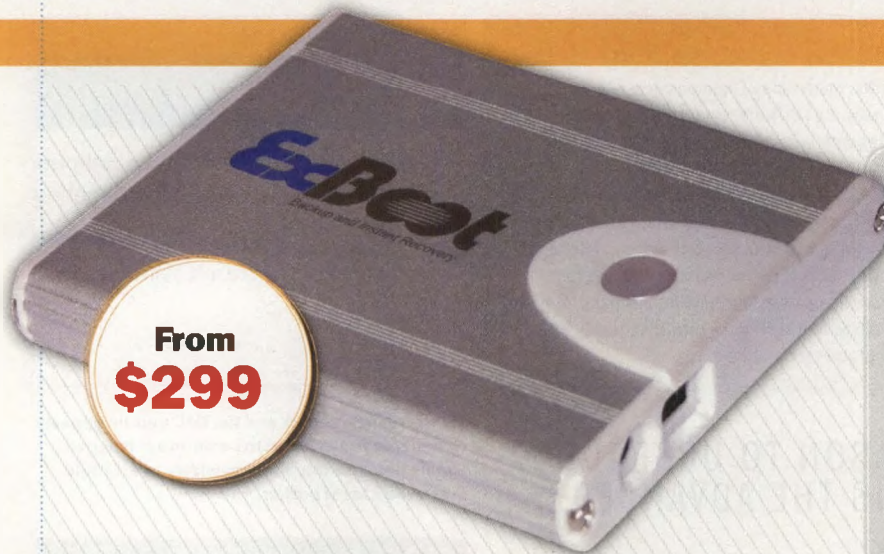


Configuring the firewall to grant access to individual programs and ports is a few mouse clicks away.



Sign up to SpyNet and share your knowledge of any programs that trip Windows Defender by mistake.

APC essentials



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Vista speed boost

Is your Vista PC running too slowly? *Mike Williams* gives it a shot in the arm, courtesy of ReadyBoost.

WHAT'S COVERED

● SPEED THINGS UP

Poor hard drive performance is a bottleneck for many PCs, but Vista has a new trick up its sleeve that might help. Windows ReadyBoost can cache files in a suitable USB 2.0 flash drive and thus make a real difference to your system speed. How much of a difference? We'll explain everything you need to know.

REQUIREMENTS

● WINDOWS VISTA

A PC equipped with a free USB 2.0 port and running an edition of Windows Vista.

● USB 2.0 FLASH DRIVE

Check the manufacturer's specification to ensure it's fast enough to work with ReadyBoost.

Windows Vista makes high demands on a PC, so could prove sluggish when it runs on a low-end system. But it has many plus points — among them, ReadyBoost, a new feature which tries to accelerate your PC by caching data on a USB flash drive. But does this work with any drive, or do you have to buy a top-quality 4GB model? And what speed increases can you expect? We decided to find out.

Testing begins when you plug a flash drive into your PC. Windows Vista does a quick benchmark to see if it's fast enough to be used by ReadyBoost and, if so, offers you the chance to use the drive to speed up your system. Select this, accept Vista's calculation of the optimum cache space it needs, and you're ready to go.

If you don't see a message, it's likely that your flash drive isn't formatted. Right-click it and select Properties > Format to rectify this (format the drive as FAT32 or NTFS). If Vista complains that your drive isn't fast enough for ReadyBoost then, sorry, but that's just the way it is. Windows Vista requires a sustained 2.5MB/s for 4K random reads, and there are some flash drives that simply can't manage that.

SPEED GAINS

Measure your system speed before applying any performance tweaks, so you can better assess their effectiveness. We opted to check

HANDY TIP

Our tests showed ReadyBoost performed well under ideal circumstances — but what if conditions weren't so good? We were pleasantly surprised: when plugging our test drives into a USB hub, for instance, speeds only fell by around one per cent. But when using ReadyBoost to transfer data via another USB port, performance dropped by a worrying five per cent. Still, the technology does seem to be useful. The problem is, results will vary according to your chipset and drivers, so a general assessment is tricky.

ReadyBoost by using the drive copy test in OpenSourceMark (www.sourceforge.net/projects/opensourcemark), then confirming real-life benefits by seeing how long it took to open Photoshop with two large images.

The benchmark process starts by rebooting your PC, then running the benchmark at least three times. This factors in natural variations, and also gives a chance for Windows SuperFetch to kick in, improving your performance over time. Now, reboot your PC, insert the USB drive and try the benchmark a few more times. We found that the first run was slower, but, as ReadyBoost learns about a tool, performance increases. Our copy test time dropped from 44 seconds to around 37-38 seconds, for instance. Photoshop opening times were faster, too. But it's not quite as simple as that.

Our test flash drives were very closely matched. The 2GB Kingston DataTraveler ReadyFlash was a very marginal performance winner, but drives from Buffalo, Kingston, Crucial and Corsair were so close behind you probably wouldn't notice any difference. Drive size didn't seem important, either: our 1GB models did as well as the 4GB. That was probably due to the fairly simple tests, but we'd still say there's little benefit in using a drive with more than twice the capacity of your RAM.

Talking of memory, ReadyBoost only really offers significant benefits if you've 1GB of RAM or less. Increasing the memory in our test PC from one to 2GB delivered much better results and left ReadyBoost unable to add any worthwhile performance gains.

If you've a decent USB 2.0 flash drive around, and a Vista PC that's a little short on RAM, then ReadyBoost is recommended: it really does work. But don't buy drives especially for this. Adding more memory is still the best way to improve performance. **ETC**

Plug a USB drive into Vista and, assuming it's fast enough, you'll be asked if you want to use it to speed up your system (enable ReadyBoost).



Overclocking, part 1

John Brandon says get the basics right and your speed-boosting project is assured of more success.

WHAT'S COVERED

● EXTREME OVERCLOCKING

Over the next two months, we're going to discover how to squeeze more speed from your PC and its key components. This month, we'll take a look at the basics and gather together a toolkit of essential software tools. We'll also explore motherboard overclocking.

REQUIREMENTS

● A MODERN PC

This tutorial will look at overclocking techniques that can be applied to newer components.

INSIDE INFO

- The site www.ocforums.com is an excellent example of how the overclocking community exchanges ideas. You can post which motherboard and CPU you own and how to overclock it, and you'll likely get several responses within a few hours. Or, you can search for your PC components and find discussions about that board and how to overclock it.

IN THIS SERIES

● PART 1 — JUNE 2007

Discover the essential theories behind overclocking and how to prepare your system to achieve the best results.

● PART 2 — JULY 2007

We'll look in detail at how to overclock key components inside your PC.

Your PC is a speed demon waiting to be unleashed. That's the concept behind overclocking, an idea that's been around since Bill Gates wore tennis shoes to work. It involves voltage tweaks to your motherboard to make your CPU run faster.

But overclocking isn't just an idle pastime for those who can't afford an extreme rig. Any system — including one built on the latest Intel or AMD platform — can be overclocked, and the speed gains are stunning. It's even possible to overclock more than just the CPU: you can tweak a graphics adaptor, make memory run faster, and even add oomph to USB ports. Extreme overclocking is like modifying a car, making it faster than the standard model. If you start with a PC kit that's already fast, overclocking pushes the envelope further.

GENERAL GUIDELINES

Not everyone is an overclocking advocate. One reason it's frowned upon by video editors, programmers, and advanced PC users has to do with stability. It's often a hobby for those who aren't using a PC for professional work, because overclocking can lead to frequent unexpected crashes. When you overclock, you're adding extra electrical current to the main board, which forces the CPU to run at faster clock cycles.

The basic overclocking methodology is to add more voltage to the motherboard using a BIOS setting, reboot, and then test for performance and stability. The more voltage you add, the better your PC will operate, but the hotter the components will be inside the case.

Overclocking can cause excessive heat. The added voltage can wear out components if the heat build-up is not reduced using extreme cooling methods, such as multiple case fans, liquid cooling or overclocking throttling techniques. These techniques typically involve a hardware switch that automatically enables or disables a suite of overclocking adjustments, so you can run in an extreme mode for compiling and rendering tasks and then switch back to normal operation for business work, emailing and the internet, or everyday production tasks, just by pressing a button.

In many respects, overclocking is one way to delay a much-needed upgrade, to stretch an

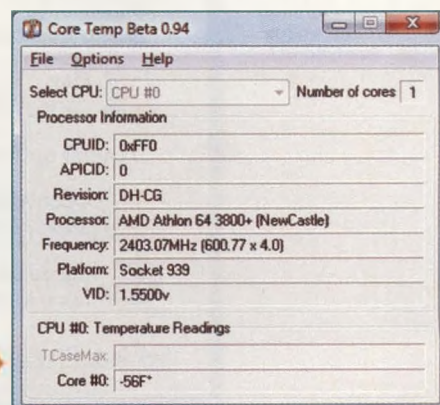
CoreTemp lets you see a quick snapshot of your CPU temperature, without a lot of other distracting details.

HANDY TIP

The process of overclocking is one that can lead to some amazing results — such as a 4.0GHz processor — but no matter how much care and effort you put into overclocking at the optimal levels, the CPU will wear out faster. Overclocking can cut the lifespan of a processor in half.

older CPU further, or just show your friends you can make a similarly equipped system run faster than the next person. Overclocking enthusiasts are a good-natured bunch who constantly exchange their latest voltage tweaks on web forums such as www.overclock.net. Yet, with the right system tweaks, overclocking can be a viable activity for pros. It's not just a showy exercise or a way to get a slightly faster framerate in the latest first-person shooter. Overclocking — if done correctly — can shave minutes off processing times for routine tasks and potentially save you several hours per week for compiling, rendering and calculations.

In this hands-on tutorial, we'll guide you through the general steps you need to know about overclocking, including the kinds of software utilities that you will need for monitoring PC performance and cooling. And we'll provide the guidance for prepping your PC so it's ready for overclocking. In the second part of this tutorial next issue, we'll show you how to overclock three popular motherboards and then walk you through the process of building an entire system designed for overclocking — and explain why its components work so well for the extreme speeds.



DO THIS...

OVERCLOCK INTEL'S 975BX2

Processor Overrides Memory Overrides Bus Overrides

STEP ONE: Run the software utilities to check CPU and case temps and install extra cooling options, before overclocking. Reboot your PC and press the Delete key a few times before entering Windows. The BIOS will appear. Use the arrow keys to go to Performance, then Processor Overrides. Agree to the terms of overclocking by changing the setting to Yes and pressing Enter.

Warning: Altering clock frequency and stability and useful life of the sys processor and other system component; and degradations in processor and sys; additional damage; and (v) affect sy; tested, and does not warrant, the oi

STEP TWO: Go to Processor Multiplier Override and change the setting to Manual. Go to Host Clock Frequency Override and then to Manual. Change the Processor Multiplier to a higher number, such as 14, using the plus and minus keys. Change the Host Clock Frequency to a higher number, such as 276, in the same way — by using the plus and minus keys. Note that the processor speed now goes up.

CPU Voltage Override
Enhanced Power Slope
Front Side Bus Voltage Override
MCH/ICH Voltage Override

Processor Multiplier Override

STEP THREE: Finally, press F10 to save changes and reboot your computer. If your PC boots normally into Windows without any problems, run common applications and games to make sure they still run at the higher frequencies, or to check whether or not a crash occurs. If there is a crash, go back to the BIOS and lower the multiplier and frequency settings.

OVERCLOCKING UTILITIES

The first step on the road to extreme overclocking isn't even hardware-related. Several software programs can help you get a clear picture of how well your PC is currently operating. Once you run these programs, it's important to take screenshots or copious notes so you can find out whether overclocking has been worth the effort — it will be.

It's a good idea to start with a program that's officially authorised by Intel, at least if you own an Intel processor. The Thermal Analysis Tool provides CPU temperature data, which is an important part of overclocking. It's available at most overclocking sites, but not officially through Intel. Motherboard and chip makers

HANDY TIP

Most overclockers will say that the best you can hope for in overclocking a CPU is a 50 per cent increase in speed. A 30 per cent increase is more likely, especially since most current CPUs from AMD and Intel are already clocked at high speeds, and most motherboards — including the Intel 975BX2 — just won't let you increase the voltage much higher than 30 per cent.



THE ADDED VOLTAGE CAN WEAR OUT COMPONENTS IF THE HEAT BUILD-UP IS NOT REDUCED

tend to look the other way when it comes to the subject of overclocking. Some companies encourage it, but often, any damage you cause to PC components will not be covered by a warranty. They know it's possible, and worthwhile, but tend to avoid the topic.

CoreTemp is another utility that works well with AMD processors: www.thecooltest.com/CoreTemp. For overclockers, CoreTemp is handy because it provides a quick readout on the current CPU speed and frequency, and the CPU temperature.

Some motherboard companies provide a utility for analysing the motherboard and connected components, mostly as a way to assist overclockers. For example, ASUS offers PC Probe to monitor CPU temps, fans, voltage levels and a history of CPU temperatures. Since it works only with ASUS motherboards, it might have a limited appeal, but no tool provides such a complete histogram of specs, including RPM level for fans, options for displaying a message

if temps exceed a set limit, and covering such details as motherboard temperature polling level and VCore threshold, which is a measure of the core voltage coming off the power supply.

Perhaps the most useful tool of all, though, is CPU-Z, a program developed by Franck Delattre and available from his web site at www.cpuid.com. CPU-Z uses a tabbed interface to let you inspect specific measures on your CPU — such as core speed, multiplier, bus speed and HT Link — cache, motherboard, memory and the serial presence detect, which lets you inspect details on specific RAM ports. None of these utilities let you change any settings; instead, they're highly useful because they let you see how your overclocking changes have affected component performance.

One final, but important, software diagnostic to use is the Windows Vista Windows Experience Index rating. This simple two-digit number (eg. 4.2) is the fastest way to compare systems without using a professional-quality benchmark,

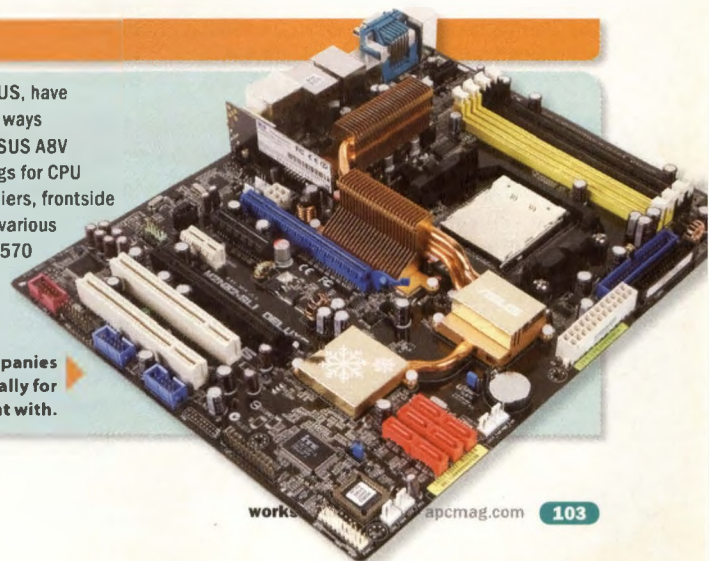
SPOTLIGHT ON...

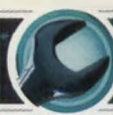
WHY OVERCLOCKING, WHY NOW?

So why is now a better time to overclock than just a few years ago? There are two main reasons. One is that there are new overclocking utilities — some provided officially by hardware manufacturers, others made by third-party programmers — that let you see minute details about CPU temperatures, mainboard settings, memory latency and graphics card statistics. Some programs have been around for a while, such as Motherboard Monitor. Others, such as CPU-Z, are still in version 1 but gaining in popularity. You can accumulate a suite of overclocking tools to master the processes. The second reason is that major motherboard

manufacturers, such as Abit and ASUS, have embraced overclocking and in many ways encourage you to experiment. The ASUS A8V Deluxe, for example, includes settings for CPU and the AMD HyperTransport multipliers, frontside bus speed, an AGP lock setting and various memory speed tweaks. The Epox MF570 is a newer mainboard that also lets you adjust many BIOS settings.

ASUS is one of many companies who make kit especially for overclockers to experiment with.





HANDY TIP

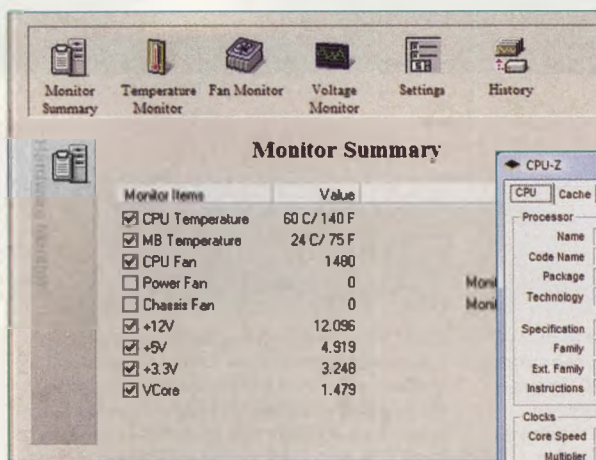
Liquid cooling is easily the best — and most dangerous — approach to overclocking. You can reduce temperatures by as much as five to ten degrees, and so overclock higher without damaging equipment. Still, water-cooling involves a complex install process for a benefit that programmers and production workers may not want to invest in.

such as 3DMark or SysMark. The rating primarily analyses CPU and graphics performance. Overall, if the rating doesn't increase when you overclock, you know that — at least in terms of Windows itself — your PC is only performing at a marginally higher rate. Go to Start > Control Panel > System. Click on Windows Experience Index and click Update My Score. Do this before and after overclocking.

COOL IT DOWN

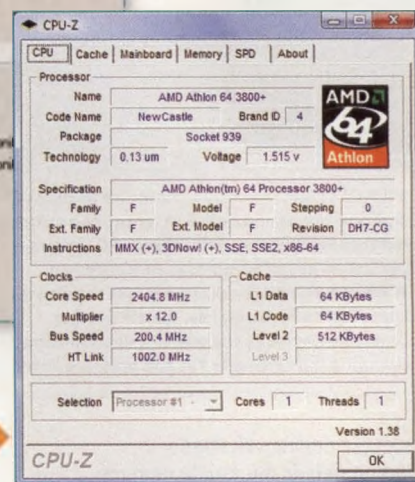
The next step in overclocking involves prepping your machine. Too many new overclockers just start setting new CPU frequencies and experiment with new speeds, but this is a sure way to damage your equipment. In the concept of extreme overclocking, we mean that your PC is already fast, so damaging a high-end processor ruins the whole concept of increasing the speed. So, we recommend that you don't jump into the BIOS and start changing options just yet. Once you install new cooling options and you know how to measure performance with the software utilities, you can easily re-run tests after you change settings to find out whether a new voltage level has changed performance. Without that course of action, you can easily fry a motherboard.

For most motherboard and CPU combos, liquid cooling provides the most dramatic affect on case and component temperatures. Thermaltake, Swiftech and Zalman all make water-cooling products that can lower CPU temps by as much as five to ten degrees Celsius. They route water through your case like a radiator in a car. Installing the kits can take two to three hours depending on your proficiency. Upgrading your heatsink and fan can also help. The Thermaltake Big Typhoon (around \$80) is one good option for both Intel and AMD processors. Adding extra case fans will help,



If you own an ASUS motherboard, PC Probe gives more detail than CPU-Z or any other tool.

CPU-Z is a tool for overclockers looking to see a wealth of info about their PC temperatures and settings.



as will turning up any adjustable case fans to the highest level possible. You can find the switch inside the case close to the fan and the attached power cable.

One issue with water-cooling for extreme PCs is that you can damage components if water leaks from the tubes, or if something malfunctions in a water pump or water reservoir. A leak may not be as daunting if it damages an old Celeron processor, but turning an Intel Core 2 Extreme system into a brick is much more depressing. That's why adding extra fans, removing unneeded components, using VGA coolers and disk coolers (and other techniques to reduce heat in your case) can also help.

For RAM modules, you'll need heat spreaders that shield RAM from overheating when you add more voltage to the modules. Crucial makes memory that's been specifically geared for overclocking: the Ballistix modules available at www.crucial.com/. But most memory makers offer aluminium shields for RAM modules. The most common cause for a motherboard and RAM meltdown (and frequent 'blue screen of death' errors) is trying to overclock RAM modules without proper cooling. VGA cooling is also a critical aspect to overclocking. The Thermaltake TMG AT2 cooler

works with most recent ATI cards, such as the X1900. It covers the card with a bigger heatsink and fan. Eight thermal pads reduce heat on the card as well.

After you've reduced temperatures, run the software utilities again to inspect the changes you made before overclocking. Now, it's time to start tweaking voltage settings. The general guide is to reboot your system, press the required key to enter the BIOS (usually the Delete key) and then look for a section on CPU settings. Your goal is to increase the frontside bus so that you're adding more electrical current to the motherboard and increasing the CPU performance. Many motherboards allow you to add a percentage increase to the voltage level for FSB, such as 10 per cent or 20 per cent.

However, again, overclocking should never be an endeavour that involves trial and error. Search for overclocking tips that deal specifically with your motherboard and CPU.

In part two, we'll cover how to overclock particular components, such as three motherboards from ASUS, Intel and Epox, graphics card and memory, and USB ports, and explain how to build an entire system that's meant primarily for overclocking. Until then, keep pushing the extreme.

DO THIS...

CHECK WITH OTHER USERS

The main rule is to always check with other hardcore PC users before overclocking. Web sites such as www.overclocking.net and www.abxzone.com host forums for discussion. You can post your vital statistics, including any water-cooling methods, and get feedback on which settings will work best. However, one critical step is to search in Google for your motherboard along with the word 'overclock'. For example, if you own an ASUS A8V

Deluxe, you can search for 'asus av8 overclock' and find a wealth of information on which overclock levels to use, what can happen if you increase voltage levels too high, and some of the trade-offs between Vcore, CPU, memory and FSB settings. Each of these BIOS options works in tandem, so raising one will affect the other. It's partly a process of trying various settings to see what works — eg. your PC doesn't crash — and

asking for advice from other users. Note that one overclocker might get great results with certain settings for the same motherboard and CPU, but use different RAM cooling methods, or a case more suited to overclocking. No matter how successful someone else has been at overclocking, you can use the same settings and damage components beyond repair if you use those settings for long periods.

Use your PC remotely

Just because you're away from your PC doesn't mean you can't get your files and folders. *Simon Pickstock* shows you how to set up Virtual Network Computing.

WHAT'S COVERED

● ACCESS YOUR PC WHEN YOU'RE NOT AT YOUR DESK

Learn how to connect to your home or office PC and retrieve your files, read your email and more with Virtual Network Computing (VNC). We tell you how to control all aspects of your computer.

REQUIREMENTS

● SOFTWARE

Download a copy of VNC — read the text of this Workshop to see which version is right for you.

INSIDE INFO

- For background information on VNC, and for a comparison table of features for some of the more popular VNC clients, have a look at its Wikipedia entry: <http://en.wikipedia.org/wiki/VNC>.

- For a .netVNC viewer that you can use on smartphones, download a client from here: <http://dotnetvnc.sourceforge.net>.

- We can't begin to describe how painful it is to control your PC from a mobile using such a small screen, but, if you're a masochistic geek, try out the VNC2go applet for yourself by downloading it from the site above. Although we got it to install on our phone, we couldn't connect, so results may vary: www.freeutils.net/vnc2go.

However organised you are, human nature will always conspire to upset your plans. We bet you can remember at least once when you've forgotten a vital document or arrived at a presentation with the wrong version of your speech. There are also times when you're away from your home or office PC and find it would be useful to have access to it. Well, thanks to the internet, you need never be separated again.

The solution is as simple as it is elegant: Virtual Network Computing, or 'VNC'. It's remote control software that allows you to take over your PC from another computer, relaying the host PC's screen back to you. Every keyboard and mouse command is relayed to the host PC, while the graphical output is sent back to the monitor of the computer you're using. It's as if you were sitting at your own PC, with the only drawback being that you can't physically access things such as the USB ports or CD drive. You can use a VNC client to control every aspect of your PC, which is useful not just for accessing your own documents, but for providing remote technical support, or even controlling that server you've got tucked away under the stairs.

Originally developed by AT&T, VNC uses the Remote Frame Buffer (RFB) protocol. It's open source, so it's not hard to find a free version, but better still, with the use of Java, it's platform-independent, so if you happen to be at your friend's house and, for some obscure reason, they only have a Mac, you can still happily log on to your PC.

HANDY TIP

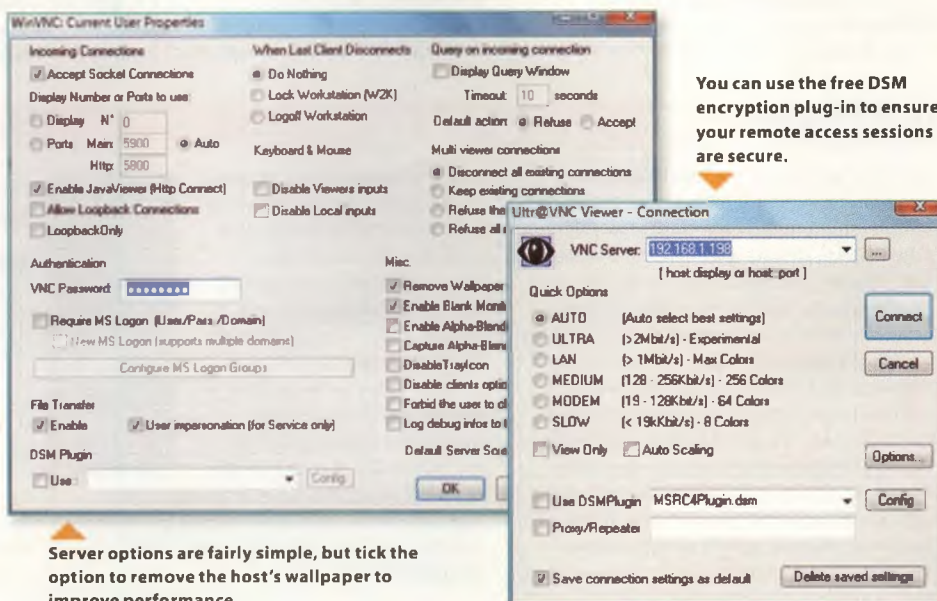
If you want to access your files, but don't want to leave your PC on all the time, you can use a NAS drive that has internet access, such as Western Digital's My Book, World Edition II. You can use Microsoft's SyncToy to keep a copy of your My Documents folder on the drive and up to date.

The protocol is very simple, basically telling the client how to draw the screen, based on the information coming from the server. However, it can be quite bandwidth-intensive, so a number of compression methods are used. Depending on what you're doing, you need to choose your compression method carefully, as you'll sacrifice speed for graphical integrity and vice versa.

By default, VNC is not a secure protocol and, although a session password is required, it's sent in plain text — so is potentially susceptible to interception as well as brute-force cracking. Fortunately, UltraVNC supports an open-source encryption plug-in that not only encrypts your password but the entire data session, so it's probably a wise choice, although this does involve some extra complexity.

CHOOSING YOUR VERSION

As VNC is open source, there are a number of versions that you can download. The version you use comes down to personal preference and how



You can use the free DSM encryption plug-in to ensure your remote access sessions are secure.

Server options are fairly simple, but tick the option to remove the host's wallpaper to improve performance.



In order to access the host machine from outside your home network, you'll need to set up port-forwarding rules on your router.

much you're willing to spend. TightVNC (www.tightvnc.com) is perfect for systems that are low on resources and has some good compression algorithms. If you're not bothered about visual quality, you can use TightVNC with an optional JPEG compression algorithm.

TightVNC also allows you to use two passwords — one for read-only access, and one for full control. File transfer is supported, but only in the development version (not the stable version), so ensure you download the correct file. It's also worth checking out RealVNC (www.realvnc.com).

UltraVNC (<http://ultravnc.sourceforge.net>) has a better graphical front end than TightVNC and is slightly more intuitive, plus it supports File Transfer in all versions. It uses a special graphics mirror driver to reduce CPU load, and a variety of authentication methods are supported, including domain log on. As already mentioned, password encryption is supported via plug-ins.

UltraVNC also supports a number of add-ons, such as a single-click launcher, a NAT-to-NAT connector that allows you to connect from behind two routers without additional configuration, and a repeater, again to enable use behind a router. Both TightVNC and UltraVNC are free, but, of the two, we prefer UltraVNC and will use it in our examples in this feature.

GETTING CONNECTED

VNC is a two-part system: a server must be installed on the host machines and a client, or viewer, on the machine you're using to connect to the host. However, most VNC clients also support Java viewing, so you can connect from your web browser. In order to connect to your host, you should install the VNC application as a Windows Service, so that it starts with Windows.

If you're going to install the VNC application on a server that's on 24/7, you should set Windows to log on automatically and change your BIOS settings so that, in the event of a power

- Special Applications
- Gaming
- StreamEngine
- Routing
- Access Control
- Web Filter
- MAC Address Filter
- Firewall
- Inbound Filter
- Advanced Wireless
- Advanced Network

Tools

Status

Help

Save Settings

Don't Save Settings

Edit Game Rule

Enable: ☒

Name: VNC

Application Name

IP Address: 192.168.1.198

Computer Name

TCP Ports to Open: 5800-5900

UDP Ports to Open: 5800-5900

Inbound Filter: Allow All Details: Everyone allowed

Schedule: Default Details: Every Day (All Day)

Save

Clear

failure, the server powers back on once the electricity supply has been restored.

Configuration is pretty minimal. The most important option is to set an access password — this should be strong and, for extra security, you should use an encryption plug-in. Most of the settings can be left on their defaults, although one important setting you should tick is the option to 'Remove Wallpaper for Viewers'. This will set the server's desktop to the default blue background when a viewer connects, to reduce the bandwidth requirements.

Before you attempt to connect to a VNC server, you'll need to make some changes to your router's firewall, as well as any software firewalls you're running. Connections within your own local network should connect straightaway without any changes needed to your router, although you may need to configure software firewalls to allow the connection. External connections — in other words, those coming

HANDY TIP

If you have trouble connecting, even with port forwarding set up on your router, download add-ons to help from the UltraVNC site at www.ultravnc.com. The NAT-to-NAT converter helps if the server and client are behind routers. If you use a software firewall, configure it to allow connections on ports 5900 and 5800.

across the internet — will usually be blocked by your router, but even if they're not, it's a good idea to set up port forwarding to ensure a trouble-free connection.

PORTS OF CALL

VNC operates on two ports by default, although you can change these if you wish, especially if your ISP blocks the standard ports. Port 5800 is used for HTTP connections, for your Java-

DO THIS...

CONNECT TO A PC WITHOUT A STATIC IP

Due to the shortage of available IP addresses, you're unlikely to have a static IP address at home (unless you pay for business broadband). Most ISPs will try to allocate you a dynamic IP number so that, whenever you disconnect from the web, your IP is freed up for someone else. The next time you connect, your IP will be different.

This is a problem for ADSL users, especially those with USB modems, as you have to make a connection similar to dialup networking when you go online. If you have a combined modem router, then you should be able to set up a keep-alive connection that never drops, maintaining your IP address. On cable, your modem tends to stay connected. However, as with an ADSL modem router, if you lose power, the next time you connect,

your IP address will have changed.

As you have no guarantee that your IP address will be the same each time you connect, the solution is to use a dynamic DNS service, like www.dyndns.com. It assigns a domain to your IP and, if you enter the details into your router or install software, it will monitor your IP address and dynamically update the DNS of your domain, so you can connect to your PC regardless of any IP changes. If you register a domain name with DynDNS and enter the details to your router's configuration, your IP shouldn't change.

Even if you don't have a static IP, you can still access your PC.

HANDY TIP

Be wary about using power saving on your PC if you intend to access it remotely. If you go into your BIOS, you should set the power saving to wake up the computer on network access (Wake On LAN): when you connect to it, it should spring into life. However, everyone's PC behaves differently, so test it locally to check that it works before trying to access it away from home.

controlled sessions, while port 5900 is used by the VNC viewer. You'll need to go into your router's setup, usually by typing '192.168.1.1' (or similar, depending on your network's IP range) into your browser and logging into the admin panel.

Depending on your router, the section you're looking for may be called Port Forwarding or Virtual Servers. The idea is to specify the incoming port, the protocol and the port that traffic should be routed to. You need to set up two rules — one for port 5800, one for 5900 — and choose both TCP and UDP as the protocols. If your router has the option to open ports rather than use port forwarding, then you can use this feature instead. On our router, this method works better than port forwarding.

To connect to the host machine, all you need to do is install the VNC viewer client on the machine you'll be using to access the host. If you aren't allowed to install software on the PC, then you can download the TightVNC viewer .EXE instead, which doesn't need to be installed.

Start the viewer and type in the IP address of the host machine and you'll be connected and prompted for a password. If you've changed the default ports, then you need to add the new port number at the end of the IP address in the connection box.

The connection Window has a number of settings you can change before connecting, found by pressing the Options button. One of the most important options is the compression algorithm used. Tight gives the maximum compression and is useful for slow networks (and is the default for TightVNC); Raw uses no compression, so is therefore only suitable for fast LANs and Hextile.



Another setting is the option to scale the display. If the local and remote machines have the same resolution, you'll need to scale the display to 90 per cent, or the remote PC's display will appear in a window with scroll bars. If the local machine's resolution is higher, you can leave the scaling at 100 per cent or upscale.

Once connected, you'll see the desktop of the remote machine within a window on your local machine, plus a number of icons at the top of the screen that allow you to carry out various actions, such as disabling input on the host machine, sending a Ctrl+Alt+Del command or initiating a file transfer. File transfer will bring up a new window and operates in the same manner as many graphical FTP clients. To the left is the local machine and, on the right, the remote host. You can browse to the files or directories you want on the remote host, then choose where you'll transfer them to on the local machine before pressing the receive button. As well as being able to download files from the remote host, you can choose to upload (send) them too.

Once connected to the host machine, you can use it in the same way as if you were sitting right in front of it.

INCREASE YOUR OPTIONS

Free VNC clients seem feature-limited, but there are several commercial solutions you can use. RealVNC (www.realvnc.com) offers a free version plus Personal and Enterprise editions. The Enterprise edition supports Mac OS and Unix authentication and Unix file transfer.

An alternative is to use a proprietary system, such as GoToMyPC (www.gotomypc.com) or LogMeIn (<https://secure.logmein.com>). LogMeIn Pro has the added benefits of local printing of remote files, guest invitation (so you can share your desktop for remote collaboration) and file synchronisation, but is restricted to Windows systems.

For the ability to connect to your desktop at any time wherever you are, you really can't beat having the TightVNC viewer on a memory stick on your keyring. **ETC**

DO THIS...

MONITOR YOUR HOME REMOTELY

As well as being able to access your files remotely, it's also possible to keep an eye on your home and possessions. For internal use you can stick with basic webcams, although they'll need to be located fairly close to your PC, due to the maximum cable length of USB devices being about 5m. You can, however, increase this with USB extenders as well as USB-to-Ethernet converters.

Webcams often come with software that allows you to upload snapshots or even stream footage to your own web space, but a good alternative is to use Orb (www.orb.com), which enables you to not only stream audio and video

from your PC, but also view your webcam footage.

It's also quite easy to turn your PC into a CCTV system, using internal and external cameras that are water-proof and which have infra-red LEDs, allowing them to see in the dark. All you need is a suitable capture card with video capture software that allows you to view and record footage remotely, or you can access the server software with Internet Explorer to view the camera feeds.

Keep your home secure by monitoring webcam or CCTV footage from a distance. ▶





Stream your media

Adam Oxford shows you how to stream your favourite music and video to every room — whatever your budget.

WHAT'S COVERED

BUILD THE ULTIMATE HOME ENTERTAINMENT NETWORK

We'll show you how to build a home entertainment network without relying on Vista's in-built tools or proprietary requirements. There are several different ways of sharing music and video between devices — we find out which is best for you.

REQUIREMENTS

NETWORKING KIT

At the very least, a UPnP-compliant router (remember to turn UPnP on — some routers still ship with it off by default) and a Windows PC. Plus, as many DLNA-compliant gadgets as you can get your hands on.

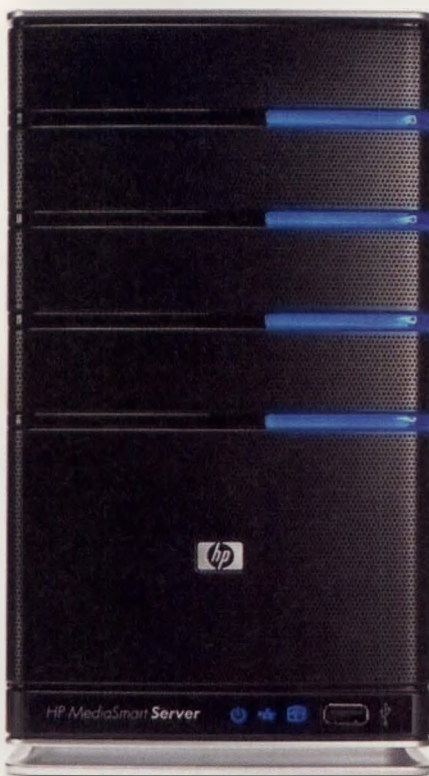
INSIDE INFO

- Although it's a little slow to update, www.dlna.org is a good starting place for certified products. Follow the link for industry partners on the site — and you'll be able to avoid too many of the cheesy graphics, too.
- News of UPnP and its AV2 (which covers media streaming) revisions can be found at www.upnp.org. The standard itself is ageing, but there's no obvious replacement for it just yet.
- The best places to stay up to date about digital home kit, though, are the dedicated forums and sites where people compare kit, talk about experiences and discover problems with new protocols (such as WSD not working with UPnP DMAs, for example).

Many of us already have two or three PCs, a high-def TV and an MP3 player or two, but the way we string them all together is disappointingly uninventive and inefficient. The same music libraries repeated on several hard drives because we're too lazy to share them across the network, or movie files scattered haphazardly across a range of machines, meaning you can never find what you want to watch when you want to watch it.

Now's definitely the time to start thinking about a long-term plan for entertainment on your home network. Not only has there been some great new networking gear — such as wireless-n routers — launched over the last 12 months, but there's been a massive effort by the industry to make sure installing it all and making components talk to each other is as easy as possible. The proprietary days of yore are giving over to the shiny new plug-and-play future, and there are some really important services on their way, too.

How you configure your own network will be down to your budget and the unique design of your home, but follow our guidelines and you won't go wrong or be out of pocket.



NETWORKING

Firstly, let's begin by applauding Microsoft. Credit where credit's due: starting with Media Center 2005 and Xbox 360, it really started to get home entertainment networking right. Previously, every half-decent media streamer on the market had relied on obfuscatory interfaces that needed a fair knowledge of networking and — in some circumstances — database management to set up.

The original SLiMP3 was an excellent first-generation music streamer, built by the hitherto unknown Slim Devices (www.slimdevices.com), which has subsequently been acquired by Logitech. It was brilliant in every way — except that you had to download Perl and install a fairly arcane piece of server software to make it work. Of course, we're not at all opposed to getting our hands dirty, but it was clear that music streamers were never going to catch on until someone sorted out the software.

Skip forward to today and, if you plug a Windows Vista-based PC and an Xbox 360 into the same network, they'll simply see each other and start sharing files. Media Player 11 will at last see other versions of itself on the same network and, with one click, allow you to stream from one PC on which it's installed to another.

Or at least, that's the idea. In practice, trying to share a music library from Media Player 11 on a Windows XP PC to the same software installed on a Windows Vista PC, both on the same wired network without firewalls running, is a hit-or-miss affair.

THE BAD OLD DAYS

There are, of course, workarounds if you're

The Microsoft Home Server was released to accommodate advanced home entertainment networks, but DLNA is the better, cheaper option.

HANDY TIP

UPnP is a fairly old technology now — ratified at the start of the millennium, it was initially used to allow peer-to-peer communication over the internet by opening up ports in your router without the need for user configuration. Nowadays, this is seen as a major security risk — but UPnP's usefulness for 'device discovery', which means hardware can plug itself into a network and extract an IP address and so on automatically, means that we're reluctant to let it go.

SPOTLIGHT ON...

HomePNA

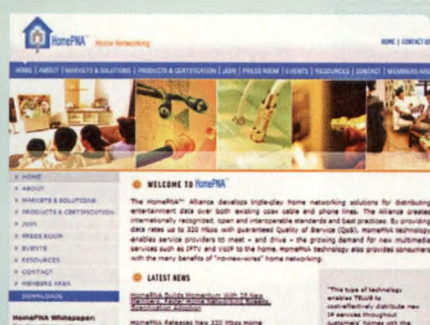
The most important consideration for any home entertainment network is going to be what you use for the network itself. For the best possible streaming experience, you're going to have to be a dab hand with a drill and Ethernet cabling, since no wireless protocol or net-over-powerline option offers true QoS (quality of service) for streaming media.

The latest wireless-n setups are a fairly safe bet, but they're still not perfect: there'll be few situations where even HD-quality movies refuse to stream over their airwaves.

There is, however, another way. Over in the US, telcos are using a new networking technology called HomePNA to wire up houses who take up

triple play (VoIP, IPTV and internet in one connection) contracts.

Using existing phoneline and coax cables — a legacy of the cable TV companies — HomePNA has a theoretical throughput of 350Mbit/s, although 100Mbit/s is most likely. It differs from wireless and powerline not only by offering greater bandwidth, but also true QoS — which is why it has been adopted by so many companies selling IPTV products in the US. That, and the fact that a HomePNA to Ethernet bridge is a hell of a lot cheaper than an 802.11n router. At present, no-one is offering HomePNA outside the US, nor are there any retail products available anywhere in the world. Watch this space for both of them, we're told.



HomePNA offers greater bandwidth and true QoS — but at the moment, only in the US.

looking to share music or videos between two Windows computers. Simply by right-clicking on your 'My Music' file and setting the file-sharing properties to 'Share this folder on the network', you'll be able to direct the music player (Windows Media Player or WinAmp, for example) on the PC you want to play music to the folder that contains the music you want to play — regardless of which machine it's stored on.

It's not as elegant a solution as simply allowing one PC to access another's library, because it means that every time you want to choose a new song you'll have to go through the 'Open file' dialog rather than searching by album, artist and so on.

You can streamline the process slightly, by adding all the files from one PC to another's library over the network, but it means that when the host PC is turned off, your library will stop working properly.

The future of home entertainment networks is clearly the Vista/Xbox scenario: being able to plug any media device into your network and have it pull music or movies from any other device, be it PC or NAS, that's also hooked up to the network, while sharing its own contents with the bare minimum of setup.

There's a drawback to the Windows way, though. While Media Player 10 and Media Center 2005 used industry-wide standards for discovery and streaming, Vista and Windows Media Player 11 use the proprietary Web Services for Devices API, which Microsoft is increasingly touting as the de facto standard for connecting devices together — but it's far from being the only logical choice just yet.

Increasingly, it's looking like DLNA-certified equipment will be Microsoft's biggest competitor. The Digital Living Network Alliance — for it is they — is an industry body whose members include Microsoft, which first produced guidelines for kit three years ago, but this is the year they seem to be coming into their own. They produced the set of standards that Windows Media Centre 2005 edition used.

Most of the specs are fairly straightforward,



THE FUTURE OF HOME ENTERTAINMENT IS BEING ABLE TO PLUG ANY MEDIA DEVICE INTO YOUR NETWORK

at the moment calling for little more than Universal Plug and Play compliance and a level of 'interoperability' (their word, not ours) between certified kit.

It basically ensures that a Digital Media Adapter (DMA) connected to a network will be able to pull common media formats from a server or NAS connected to the same network. In the future, however, DLNA is planning to update its certification to include things like printer sharing, Quality of Service and the ability to use a mobile device — such as a Bluetooth phone — to move files around your network and start players remotely.

PUTTING IT TOGETHER

DLNA-certified DMAs are appearing everywhere and, thankfully, manufacturers are being a lot more creative than simply building receiver boxes. The most elegant way of getting video from your PC to your TV, for example, is to be able to leave the PC out of the lounge running some form of UPnP/DLNA server software — and have a DMA built in to your TV.

That elegance has already been realised. Sony, Pioneer and Toshiba all have TVs on the market already with DMAs built into the back of the screens, which reduces lounge clutter while giving you full access to your video files in whatever format you wish. The only drawback is that Pioneer's models are all plasma-only, while Sony's new Bravia X series has forgone the DMA in favour of higher resolutions.

So for the time being, you're going to have to remain a little more old-school when setting up your dream network. Which means either a media centre-style PC next to your TV, or something a little more lounge-friendly, such as a networked DVD player that's UPnP compliant.

Linksys' WRT350N router includes USB for simple, cheap NAS.



Wireless speakers with embedded streamers, such as the Streamium range from Philips, are convenient and cost-effective.

IN REALITY, PEOPLE WANT TO ACCESS THEIR FAVOURITE MUSIC WITHOUT CARTING THEIR IPOD DOCK AROUND

There's a great new product on the market from Linksys that should be at the top of any entertainment network builder's shopping list. Its WRT350N router not only provides the MIMO power and bandwidth of 802.11n for those high bit rate files, but it includes a USB port for attaching cheap hard drives as an instant UPnP NAS.

We've never been overly convinced of the appeal of NAS for the home, as dedicated devices are expensive and inflexible — but the Linksys router makes an enormous amount of sense. It's certainly a better solution than an expensive media server box — and there is definitely no shortage of those doing the rounds — or what we've so far seen of Microsoft's Home Server.

Any UPnP device — including the Nokia N80 mobile phone — can access the music and movies stored on those drives, and you no longer need to leave your PC running 24/7 for an effective way of keeping all your files accessible all the time. Your power bill will thank you.

MUSIC EVERYWHERE

Streaming HD video will remain the headline technology for the digital home because, well, everyone likes HD — and you can always bring in pictures of famous people to illustrate it. In reality, though, people are more likely to want to access their favourite music while washing the dishes or eating dinner without having to cart their iPod dock around with them. Enter Avega Systems Aios (www.avegasystems.com), which turns an ordinary set of speakers into a wireless DLNA hub.

As with TVs, it's the removal of the extra box for streaming that makes these stand out from the crowd. There's Philips' Streamium range of adaptors and hi-fis, which have been favourites for years, but the elegant simplicity of just putting speakers down and having them pull music from your storage via the network gives Avega the edge, in our opinion.

BACK TO THE PC

Many of us, though, are still relying on quietened PCs in the lounge room for playing

back digital content on our TVs. Using a separate PC or NAS as a media server can be troublesome when sharing content — various versions of Media Player, for example, won't talk to each other, and there are DRM issues to bear in mind too.

If you do have a separate media server, try using software such as Cyberlink's SoftDMA (part of the PowerCinema package) as an open alternative to Windows Media Player. This offers you the simplicity and connectivity of a straightforward UPnP hardware device, but in a Windows environment. You could also consider upgrading your server software too — see 'TVersity media server', below.

There's no one-size-fits-all approach to entertainment networking, which is why there are a lot of 'specialists' selling solutions to people who have money to burn. With some effort, some free software and DLNA-compatible hardware, though, you can connect up your entire home with the level of simplicity and elegance with which Vista talks to Xboxes. **ETC**

DO THIS...

TVersity MEDIA SERVER

Even though DLNA is starting to establish itself as the digital home standard, there's still a long way to go — and compatibility issues remain a major reason not to upgrade your home. If you want proof we've come a long way in the last year or so, though, try downloading TVersity from www.tversity.com.

This uncomplicated piece of software provides one interface to take control of all the

UPnP devices in your home — from an Xbox 360 to a PlayStation Portable. From one iTunes-a-like screen, you can move files around, sync devices and transcode video for playback on custom screen sizes. It also acts as a UPnP media server for DMAs wanting to access your PC on their own terms. Even better, it's entirely free.

TVersity provides a single interface to control all your UPnP devices.



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Control your inbox

Access email anywhere. *Karl Hodge* offers advanced tips on switching to an online service.

WHAT'S COVERED

- Webmail services have come a long way in the last few years. With more generous storage, Ajax-enabled interface enhancements and advanced features, they're every bit as functional as your desktop client. We look at two head-to-head competitors, Google Mail and Windows Live Mail, and outline the advantages of switching your primary email to one of these services. Need to maintain your existing identity? We cover that too with backup tips, POP and personalisation tweaks.

The perception of webmail is that it's great as a backup. It's the email address you can pass out to online services and 'fair weather friends' without cluttering up your real inbox. With close to 500 million registered users between them, the big three providers aren't short of success. How many of those are primary addresses though? Not many, we'd wager. Here's the rub: we think Google Mail and Windows Live Mail can now match your desktop mail client feature for feature. In fact, with the advantages online mail offers, it could be time to ditch your deskbound address altogether. We'll take a look at what webmail has to offer, uncover hidden features to give you greater control and show you how to replace your current account.

If you don't have an online email account, they're easy to acquire. Just fill in a quick form. That's even true for Google Mail (www.gmail.com), the service that used to require an invite from an existing user. Now it's out of beta and anyone can join.

ACCESS ALL AREAS

Portability is the biggest selling point of webmail. You can access your email from any computer with a net connection. This means you're not tied to one ISP. Move to another provider and your email address moves too.

We all dread booting into a blue error screen, but, if your primary email account is online, that's one thing a local hard drive failure can't destroy. Of course, you should back up all your data, including your webmail, regularly. Recent changes to online services have made this easier than ever. These are the main rewards for switching, but webmail adopters enjoy faster

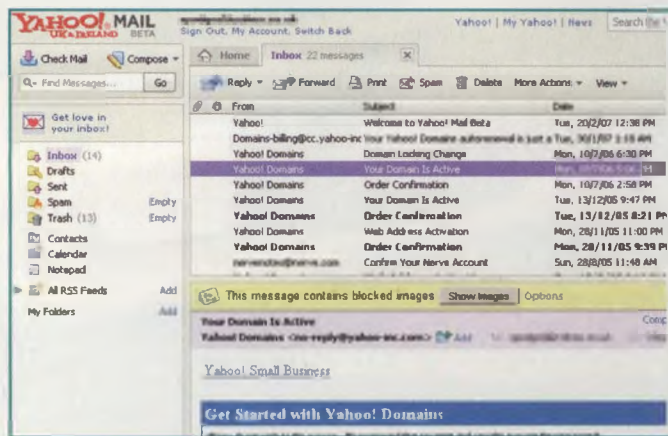
archive searching, generous storage allocations and a range of extra features you don't get with free desktop clients.

There are downsides. Putting your mail online means there's a small but increased chance that someone else might access it by nefarious methods. Though there have been security loophole scares over the years, webmail is as safe as you make it. Make sure you're logged out and cookies are cleared after using a shared or public machine, change your login details frequently and steer clear of easy to crack security questions and passwords.

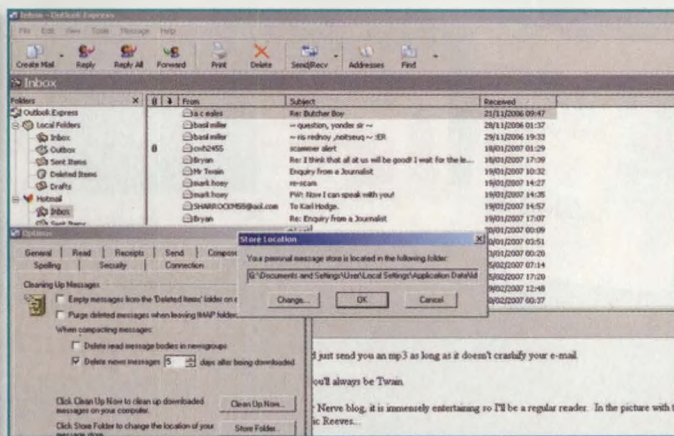
We mentioned the vexation of losing emails in a local crash. It's rare, but not unheard of, for online services to lose data. If you don't log in to your account frequently, at least every 30 days in most cases, it may be wiped. Regularly backing up your email is still a wise move. Thankfully, most services offer one or more methods of doing this.

BACKING UP WEBMAIL

If you're an Outlook Express user then Windows Live Mail, formerly Hotmail (www.hotmail.com), has a perfect way to keep local backups of your online email. Open Outlook Express and go to Tools > Accounts. Click the Mail tab and then the Add button. When prompted, enter your name then the Hotmail address for the account. On the E-mail Server Names screen select HTTP as 'My incoming mail server' and Hotmail as your service provider. Click Next and fill in your account address and password. When the new account has been created, Outlook Express will download the mail stored in here, leaving copies on the server.



Yahoo! Mail is a worthy alternative to Microsoft and Google, with a recently overhauled interface that makes it close to using a desktop client.



Once online emails have been transferred to Outlook Express, they can be exported to Outlook or MS Exchange.



You can access your Google Mail account with Outlook Express (or any other mail client) using POP rather than HTTP. Once logged into your account, click Settings and the 'Forwarding and Pop' tab. Enable POP by selecting either 'Enable POP for all mail' or 'Enable POP only for mail that arrives from now on'. By default, Google Mail keeps copies of download mail on the server. Click the Configuration Instructions link to find out how to connect to the Google Mail POP server with your mail client.

To back up Hotmail or Google Mail messages stored in Outlook Express, go to Tools > Options. Click the Maintenance tab, then the Store Folder button. You'll see a local path to your mail folder. Highlight this and copy it to the clipboard. Hit the Windows key and E to open Explorer, then paste the path into the address box with Ctrl+V. You'll see a folder containing a series of *.dbx files, each corresponding with a mail folder in Outlook Express. You can back these up to disc or make easily accessible copies elsewhere on your local drive.

THE PERSONAL TOUCH

Some folks are reluctant to use a webmail service as their primary address, as it looks 'cheap'. We certainly wouldn't advise putting

SPOTLIGHT ON...

WINDOWS LIVE MAIL

If you haven't checked out Hotmail for a while, you should. The system is undergoing changes as part of Microsoft's rebranding and overhaul of its online services. Though Windows Live Mail is still in beta, it's open for everyone to try.

If you have a Hotmail address, sign in and click the green 'Windows Live Mail beta' button to switch your account. If you don't have a Hotmail address, you can sign up for one at www.hotmail.com, then switch to the Live Mail beta after log in.

You can easily back up Hotmail or Google Mail messages stored in Outlook Express.

a Hotmail address on your business cards. There's a fix for this, but you'll need a domain name of your own first. Most hosting services provide mail forwarding to any domain you have parked with them. Simply check your host's documentation and forward the domain or a selected email address on that domain to your webmail account. You can now hand out a more professional-looking address.

With both Windows Live Mail and Google Mail, you can change the 'Reply to:' address so it points to your chosen domain rather than directly to your webmail account. In Google

Benefits you'll enjoy include 2GB of storage, a drag-and-drop interface and a context-sensitive menu to delete, reply and forward mail when you right-click. You also have great control over the look of the Live Mail interface, with selectable themes and an editable layout.

Though Live Mail is slickly themed, it lacks some features Google Mail users take for granted. There's no POP mail access and no tagging, but the folder-based file system may appeal more than Gmail's message board styling.

Go to Tools > Internet Options and click Programs. Select Windows Live Mail from the Mail drop-down. This will allow you to connect Live Mail as well as older Hotmail accounts. Now, even in other browsers, an Internet Explorer window will still launch and open your Windows Live Mail account.

Mozilla Firefox has a hidden configuration setting for the default mail client it launches — but it's not accessible through the browser's GUI. There's still a way to get the application to open mailto: links in Google Mail at least. Install Gmail Manager from www.longfocus.com/firefox/



PORTABILITY IS THE BIG SELLING POINT OF WEBMAIL: ACCESS YOUR MAIL FROM ANY PC WITH A NET CONNECTION

Mail, you do this in Settings > Accounts. In Live Mail, choose Options > More Options, then click 'Send mail from different email addresses'.

READY TO LAUNCH

If you've ever clicked an email link in your web browser, you'll know that it launches a new mail composition window in your default email client. A quick fiddle under your browser's bonnet can change this. Internet Explorer 7 has direct support for Live Mail.

[gmanager/](http://www.longfocus.com/firefox/) using Firefox. This extension not only detects mailto: links and forwards them to Google Mail, but helps manage multiple accounts.

Want to open mail links in Google Mail with IE instead? Download and install Gmail Notifier from http://mail.google.com/mail/help/notifier/notifier_windows.html. Ensure you check 'Use for outgoing mail'. The setting won't show up in Windows 'Internet Options', but Google Mail will be now be automatically configured as your default service.

DO THIS...

CENTRALISE YOUR EMAIL

Google Mail's POP 3 capabilities mean you may be able to centralise all your email accounts. This is a new feature that's being rolled out to new users first, so if you sign up for an account today you'll be one of the lucky ones.

Configuring the feature is similar to adding a different 'Reply to:' address. Go to Settings > Accounts, then choose 'Add another mail account' in the 'Get mail from other accounts' section. Fill in the 'Enter the email address...' box with your old POP email address, then click Next. Google Mail will try to add your POP server address and username fields by itself — you're responsible for entering your password. Make sure you check the

username and POP server fields, too, as Google Mail could get it wrong.

When you've finished tweaking these settings, click Add Account. You'll be given the choice of sending mail from the new address you've set up, too. To do this, you'll have to click through the wizard until you're prompted to send a verification email to your POP address. Once received, you can prove you're the email account's legitimate user by logging into your old account and clicking on the confirmation link provided. Now you'll be able to read messages sent to your old email address from the Google Mail interface.



Add up to five POP 3 email accounts to Gmail, but this may be missing for early adopters.



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HIGH-PERFORMANCE PLAYTIME

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The Games Factory 2

Rumour has it there's a Sam & Max sequel in the works, which has us dreaming of the days of classic adventure games. If you've ever wanted to make your own — and let's face it, who hasn't? — the Games Factory could start you in the right direction. A sort of drag and drop game maker, you can build levels by using supplied monsters, powerups and other items. The idea is that you don't need programming knowledge. Maybe you'll create the next Half-Life 2; maybe you'll create the next Zelda: The Wand of Gamelon.

.. CONTACT Clickteam
.. ONLINE www.clickteam.com
.. PRICE \$80
.. VERDICT ★★★★★☆



Sony MEXBT2500

The premise behind high-tech car stereos is they connect to all your gizmos so you can keep both hands on the wheel. The MEXBT2500 lets you connect up to five different phones via Bluetooth, play digital music in MP3/WMA format and stream music. When you're done, you can also soothe your jangly nerves to the sweet harmonies of Extreme's 'Hole Hearted' as you contemplate the big questions — such as whether Mini-Disc really was a good move, and what would have happened if Pringle-can Wi-Fi broadband ever took off.

.. CONTACT Sony
.. ONLINE www.sony.com.au
.. PRICE \$449
.. VERDICT ★★★★★☆

Chatterblocker

Somewhere, sometime, in an office cubicle far away, we're guessing a programmer had a really bad day and made this software. Install it on your PC and, when your cubicle pals get too noisy, you can drown them out — Chatterblocker plays a mix of music, nature and background sounds. The guy behind this company also once worked on arcade games such as Tron and Gauntlet. According to his resume, he has also designed a prototype for a cat collar called the 'Purr Detector', which lights LEDs when it detects the cat is purring. Respect.

.. CONTACT The Sound Guy
.. ONLINE <http://chatterblocker.com>
.. PRICE US\$19.95
.. VERDICT ★★★★★☆



Aurvana DJ Headphones

Are you a DJ? Didn't think so. Still, just reading the specs on these headphones makes us want to throw our ear-pad headclamps in the nearest bin — for one thing, these models have got Neodymium inside. NEODYMIUM, people! Start rejoicing because you will never hear a clearer rendition of Shannon Noll's 'Now I Run'. What's more, the cabling is oxygen-free — there's literally no oxygen in there — and the plugs are gold-plated, so you know the Aurvana's are top-shelf. Also, the ear cup has rubber grip.

.. CONTACT Creative Labs
.. ONLINE www.creative.com
.. PRICE \$129.95
.. VERDICT ★★★★★☆

2006
UBER

Super cool

2006
1337

Very cool

2006
noob

Uncool



ViewDock PJ258D

In this day and age, your screen can never be too large, which is why iPods are great for music but a little lacking when it comes to home theatre and movie watching. Enter the Viewsonic ViewDock, a projector with a built-in slot for an iPod, so you can watch *Desperate Housewives* in the large screen format it was always designed for. If you can't afford the price tag, perhaps an Apple TV (extra screen required) might be more the ticket. If that's not an option, then we're out of ideas. Perhaps buy a huge magnifying glass?

.. CONTACT Viewsonic
.. ONLINE www.viewsonic.com.au
.. PRICE \$1,799
.. VERDICT ★★★★★

Gigashot R Series

Should your camcorder fall to the ground, a gravity sensor in this Toshiba camcorder will "protect" your recordings. This is great news, because if you've headbutted your camera during an enthusiastic session of classic catches in the backyard, it can ruin the picture. An important feature, if you've ever heard anyone say, "This is pretty much the worst film ever made." The Gigashot R series has a mini hard drive inside and comes in two flavours — 30GB or 60GB — and also has a burn to DVD option.

.. CONTACT Toshiba
.. ONLINE www.toshiba.com.au
.. PRICE \$999
.. VERDICT ★★★★★

iHorn

It's called the iHorn, but the output on this little speaker is really more of a low drone than a roar. That's to be expected — this is about portability, not home theatre. In fact, we found it didn't really cut the mustard when it came to YouTube video playback. Take it with you on holidays and give your picnic a bit of extra atmosphere with the 'Technology' song from *Napolean Dynamite*. As the front of this cute little mini-speaker boldly states: "The Best Experience of Portable Sound Solution".

.. CONTACT Protac
.. ONLINE www.protac.com.au
.. PRICE \$39
.. VERDICT ★★★★★

AV Webcam Morpher Gold 1.0

Hats off to Audio4Fun for consistently coming out with some of the weirder software to grace the net. This one's the Webcam morpher, which has a set of 'nickfaces' and 'nickvoices' you can use while you're chatting online. We can't say we'd use it ourselves, but it'd be good for freaking out your friends, or even better, getting into the role on RP chatrooms if you're a WoW player. Don't even try pretending that you don't debate Elf folklore for hours on end (or the historical significance of Frodo's costume changes in *Return of the King*).

.. CONTACT Audio4Fun
.. ONLINE www.audio4fun.com
.. PRICE \$69.95
.. VERDICT ★★★★★



'Station's bodacious creations

Troy Coleman samples the tasty delights of the PlayStation 3.

We've all read the specs, so we know very well what this behemoth is capable of. Aside from networking, video, audio and photo storage/slideshows, the real balls of the PlayStation3 lie in its gaming. It's a hefty machine with an equally hefty price tag attached. For the price of the console alone we could have played 2,499 games of Wonder Boy in Monster Land back in the good old days of game arcades. That said, the PS3 remains a very sexy, very desirable toy.

We managed to get our greasy mitts on a PS3 unit just prior to the midnight launch. Now we just need to find an excuse not to send it back. "Er... our cat ate it?"



Resistance: Fall of Man

Set in an alternate history, Resistance assumes WWII never happened. Instead, an alien race, the Chimera, invaded Earth and systematically slaughtered our population. As the obligatory American GI, it's up to you to kill everything. Resistance features fantastic game physics in well-constructed environments, with good enemy AI. The most outstanding feature of Resistance, however, is the range of weapons available: from the standard machine gun to shotguns, sniper rifles and Chimeran weapons such as the Bullseye, which attaches a homing beacon to a target. Each round fired will alter its course to home in on the beacon. Co-op mode is supported as well as online play, which supports up to 40 players at once.

CONTACT	SCE
ONLINE	www.resistancefallofman.com
PRICE	\$99.95
✓	Fantastic game physics; weapon design.
✗	Storyline lacks depth.
VERDICT	★★★★☆



Marvel: Ultimate Alliance

After attacks on a S.H.I.E.L.D. Helicarrier by a legion of villains under the control of Dr Doom, Nick Fury coordinates superheroes to thwart Doom's evil plans. A team of four heroes — Wolverine, Thor, Captain America and Spiderman — begin the game, with more unlockable characters as you progress. You can switch between characters at the touch of a button to punch, kick, slash and button-mash your way through pseudo-3D environments. Completing levels earns you points to upgrade a character's skill set, unlock new attacks and even obtain costumes from the different eras of the character. Graphically, Ultimate Alliance isn't groundbreaking, but it does replicate well a comic book-styled environment. *Nuff said.

CONTACT	Activision
ONLINE	www.marvelultimatealliance.com
PRICE	\$119.95
✓	Great cast of playable superheroes.
✗	Button mashing can get a tad dull.
VERDICT	★★★★☆



Ridge Racer 7

The unwieldy and impossible-to-predict art of drifting (the ease with which you can lose and then regain control of your car) is at the heart of this arcade-style racer — and is what sets it apart from all the others on the market.

Forty-two tracks are raceable (21 tracks — both forward and backward), but the majority of these are the same as previous RR chapters. As in most racers, upgrading your vehicle with after-market parts is the only way to progressively win races. Before you can do this, however, you'll need to impress car vendors in manufacturers' races to earn the privilege of using their parts. Online play is supported and allows up to 14 players to race at once.

CONTACT	Namco
ONLINE	http://namcobandai.games.com
PRICE	\$99.95
✓	Insanely unrealistic driving.
✗	Same tracks as previous versions.
VERDICT	★★★★☆



Formula 1 Championship Edition

Formula One Championship Edition's game modes include quick race, time trial, grand-prix weekend, online, world championship and career. Needless to say, there is an incredible amount of racing to be had. At the beginning of each meet there are three rounds of time trials to determine the final six, first six and pole positions.

Driving aids such as brake assist and a drive-line indicator are available for the beginner player to ease in to the action. Camera shake and some motion-blurring give a sensation of blistering speed that will keep you on edge.

Online play supports up to 11 racers at one time, with the option to strengthen the field with computer-controlled cars.

CONTACT	SCE
ONLINE	www.playstation-f1.com
PRICE	\$99.95
✓	Game length; sensation of speed.
✗	Extremely hard.
VERDICT	★★★★☆

Stalker: Shadow of Chernobyl

Richard Cobbett is 50/50 on the most hostile game in years.

Assuming all goes to plan, this is the fourth rewrite of this review. Stalker is one of those games with a knack for changing your feelings in an instant, and not always to its benefit. It's hands-down the most hostile game for years. Walk too far off the path? Instant death. Run out of health packs in enemy territory? Instant death. Wander lightly into the wrong tunnel? Instant death.

It takes ages to get comfortable with the guns, to get a grip on the environment, and to be good enough to deal with whatever its apocalyptic setting might throw at you. And in a way, that's not a huge problem.

Its world is hostile. Its people don't care about you in the slightest.

It's a harsh environment that sucks people in and spits them out as mutated corpses. The trouble is that this argument starts to pall a little on your millionth quickload. It's not that it's unfair. It's just often not fun. And then you get a moment where it all clicks. The bad guys fall, the radioactive curtains peel away, and the experience just works. You forget about the frustration and sink back into the experience, conquering it. And then you die ten times in as many minutes, and you're frustrated again.

Bluntly, Stalker is a confused game. It's a shooter, but one that thinks it's an RPG. You get all manner of pointless bits thrown in, like the need to eat (yet never having to go

to the toilet) and stamina restrictions, and an endless cast of thoroughly generic enemies living inside hideously generic missions. It focuses on winning through your own skill, with tough enemies that take some effort to take down, but then blocks you based on arbitrary statistics in areas like the Arena. The script is boring, yet there's a charm to hearing the Russian dialogue and impromptu guitars amidst the devastation.

When it works, it works. But when it doesn't... Stalker isn't a bad game. It's not a great game. It's a good game, but it's a gamble. If you have the patience to get past the rougher edges, it's a highly involving adventure in

a beautifully designed world unlike any other game. If not, it's a silver Frisbee. Nobody said the apocalypse was simple or always fair.

CONTACT THQ
ONLINE www.stalker-game.com
PRICE \$99.95

✓ Involving adventure; random guitars.

✗ Quick deaths; boring script.

VERDICT ★★★★★



Ricky Ponting International Cricket 2007

Troy Coleman tries to find the button-combo for sledging.

We were a little concerned when threatened with the prospect of having a googly pitched into our corridor of uncertainty... but after playing Ricky Ponting International Cricket 2007 (RPIC07), well... we're still concerned.

To begin a game, you can choose up to one of three game modes: World Cup, Champions Trophy and One-Day international. For the cricket fanatics, custom tests or a twenty-over match can also be created.

One addition to RPIC07 is a coaching mode, where you can learn everything from the basics of the game through to advanced tactics.

All action revolves around a sliding meter. Batting or bowling, simply press a button before an indicated line or within a specified range to be successful. Timing is everything here, but, even for a beginner, the learning curve is only about half an hour.

Bowling is a three-step process: click to begin a run-up, aim where the ball will land, then click to

release. Different balls are assigned to the four main buttons and, if your confidence is high, two special bowls are activated via the triggers. Fielding is terrible and best left to the AI. A meter flashes across the screen well before the fielder even reaches the ball, and there seemed to be no effect even if we managed a button press within range.

Batting is easier: aim and strike. Ignoring the meter and timing the ball as it comes down the pitch yielded the best results. In the easier game modes it's not difficult

to slog 4s and 6s at a regular rate, but crank up the difficulty and you'll need to work hard for singles.

Taking nothing away from gameplay, the graphics are fairly average; bots vaguely resemble the character they are intended to.

As dry and colourless as it can be at times, it's great to hear familiar, high-profile commentators like Bill Lawry and Tony Greig (among others) calling the game.

CONTACT Atari
ONLINE www.atari.com.au
PRICE \$109.95
PLATFORM XBOX 360

✓ Brian Lara out for a duck.

✗ Fielding.

VERDICT ★★★★★





Forget me nots

Disaster struck recently: your humble Chip Chat writer's PC just plain refused to boot. Here at the mag we assumed it was hard drive failure — and promptly sent it off to the good folk at Ontrack Data Recovery to see what they could do. (They recovered everything, as it turned out; a malfunctioning motherboard was the cause of the grief, but that's another story. . .) Anyway, here's a couple of the more extraordinary scenarios from Ontrack's recently published Top Ten list of *successful* data recoveries for 2006 (btw, mine's not included):

 Laptop dropped out of helicopter in Monaco (data recovered and delivered for meeting in Hong Kong *the next day*).

 Data recovered after laptop drenched in shampoo on a flight from London to Warsaw (packed in same bag as toiletries).

 Terabyte of data recovered from equipment after fire broke out in computer science department (water damage through sprinklers, too).

 Data recovered after old, rotting banana seeped into external hard drive ("the banana could not be recovered").

 Data recovered after man reformatted his hard drive *ten times*.

Ah . . . restoration comedy.



eBay. You really have to put your trust in that item seller, don't you? I mean, all you've actually got to rely on is their 'Feedback' percentage rating. . . (oh, and eBay's official buyer protection scheme, of course). Take the case of Lincoln from Ontario, Canada, for example, who posted an account of his decidedly less-than-tasteful eBay experience on www.vitaluna.net. Lincoln, a full-time student, offered to replace his friend's dying PC (and accordingly won an eBay auction for a G4 Mac on their behalf). On receiving the package and opening up the box, Lincoln noted that a limited amount of foam padding had been used to secure

and insulate the item's safe passage — but so had an empty pizza box — plus empty bottles of Coke and milk (well, they were almost empty). When powering this unsavoury Apple up, Lincoln observed "the hard drive merrily engaged in the 'click of death' on bootup. And was short half the RAM that it was supposed to have. And was a slower processor than first described. Oh joy." Lincoln's seller eventually *did* put out for a "partial refund, more RAM and another HD. . . which he shipped *sans garbage*, much to my disappointment. I was thinking, 'Smaller box — maybe this time I'll get a used condom, or a zip-lock bag of cat hairballs.'"

COT between ROCK AND A HARD PLACE

So, you settled down and had kids, huh? Man — it used to be about the music! Well, don't give up hope just yet, 'cos www.CribRock.com offers you rock salvation, infant-style. Founded by Rob and Amy from Denver, Colorado, CribRock produces "baby-friendly instrumental versions of your favourite hard rock and metal

classics". Sounding all nice, synth and non-threatening, the company's first release, *Full Metal Diaper*, features cutesy covers of AC/DC's 'You Shook Me All Night Long', Metallica's 'Enter Sandman' and the Gunners' 'Sweet Child O' Mine'. For those of a more pop persuasion, there's also *St. Elmo's Pacifier*, serving up, among other '80s hits,

Duran Duran's 'Hungry Like The Wolf' and A-Ha's 'Take On Me'. CribRock doesn't make any grand claims about the effects of rock and pop on your offspring — they're just trying to appeal to the old folks: "[We offer] no guarantees of IQ or emotional development, but we do think you'll have a fun time listening to it." **apc**

CRIBRock

Move over lullabies, it's time for baby music that rocks!



★★★★★
"utter brilliance"
— posted on CDBaby

chip chat

by Peter Dockrill

SILVERWATER
137 Silverwater Rd
(02)97488322

CHATSWOOD
Shop 1, 3-9 Spring St
(02)98848655

PARRAMATTA
85-87 Macquarie St
(02)96335566

LIVERPOOL
222 George St
(02)98214690

PENRITH
Cnr Station & High St
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***\$165**

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450W Midi Big Case
Gigabyte All in one Mainboard
Onboard Graphics, On Board 8-CH Sound
Keyboard & Optical Mouse
Ideal for Home & Novice Computer users

From;
***\$386**

ARC Home Internet System

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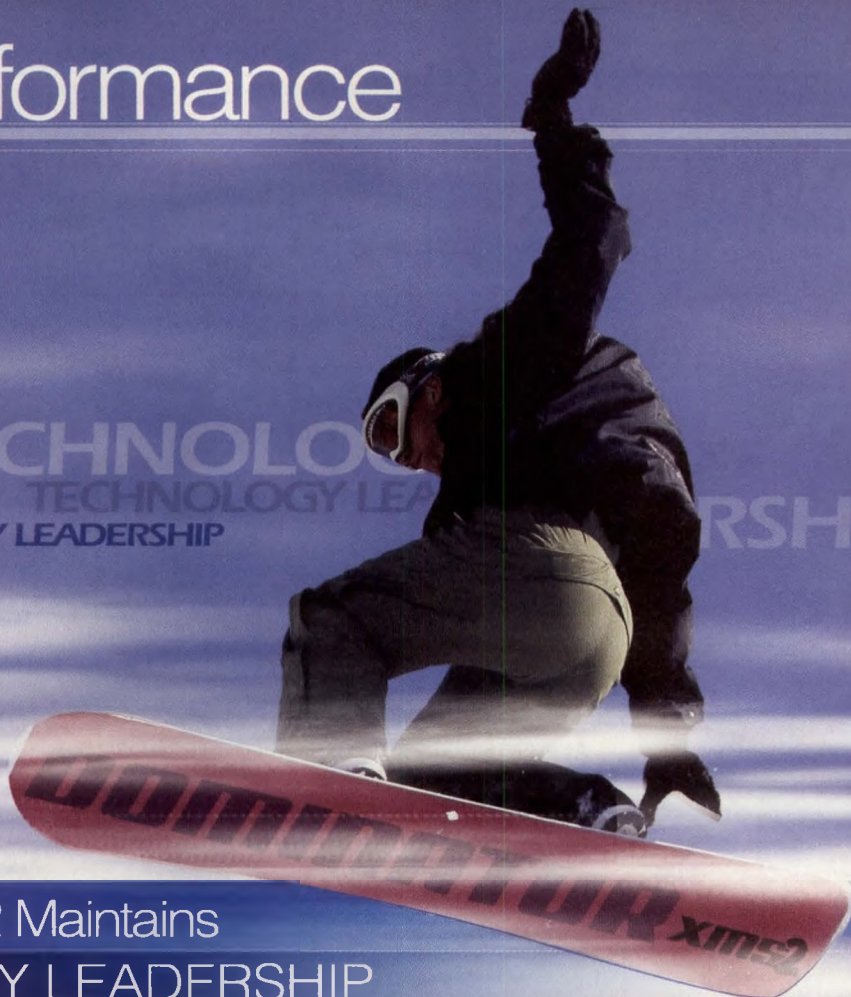
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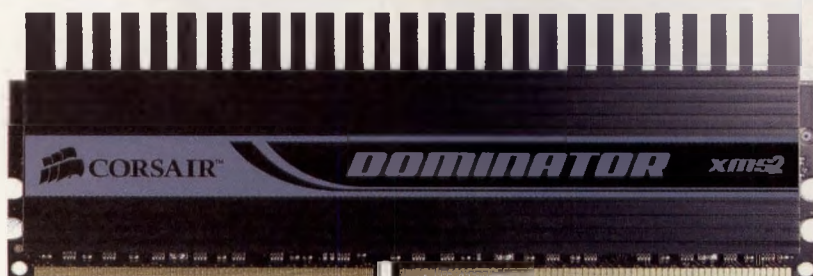


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How CORSAIR Maintains TECHNOLOGY LEADERSHIP

XMS2



INNOVATION
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Protect Components While You Push Performance

Pushing performance specs generates heat, and that can compromise reliability and component life. The advanced cooling ability of DHX heat sinks keeps your memory safe and reliable even as you push it to the limit. Under the name XMS2 Dominator, this DHX technology will be showing up on both Corsair parts designed for extreme overclocking and on memory designed for performance computing and gaming.

Also Featuring Enhanced Performance Profiles (EPP)

As with all new Corsair performance memory, XMS2 Dominator modules feature EPP, the new open standard for the Serial Presence Detect (SPD) jointly developed by NVIDIA and Corsair. EPP simplifies overclocking for beginners and provides unparalleled control for experts.



An optional fan (not shown) provides even more cooling and protection.



Corsair's proprietary DHX technology dissipates heat two ways: it draws heat away from the module through the RAMs and provides an additional path for heat transfer within the module through the ground plane!



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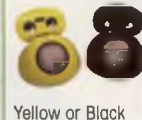
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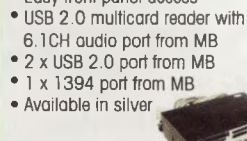
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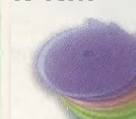
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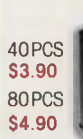
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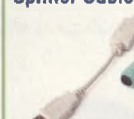
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Model	Genuine	TONNY
BCI-24BK	\$14.00	\$5.60
BCI-24C	\$33.00	\$7.20

Model	Genuine	TONNY
BX-3	\$49.00	\$28.00
BC-02	\$39.00	\$28.00
BC-03	\$38.00	\$28.00
BC-05	\$50.00	\$30.00
BC-20	\$49.00	\$28.00
BCI-3eBK	\$25.00	\$ 8.80

Model	Genuine	TONNY
BCI-3eC/M/Y	\$19.00	\$6.40
BCI-6BK	\$24.00	\$6.40
BCI-6C/M/Y	\$24.00	\$6.40
BCI-6G	\$24.00	\$6.40
BCI-6R	\$24.00	\$6.40
BCI-6PC/PM	\$24.00	\$6.40

Model	Genuine	TONNY
BCI-15BK	\$24.00	\$6.40
BCI-15C	\$44.00	\$7.20
BCI-16C	\$44.00	\$7.20
BCI-21BK	\$13.00	\$4.90
BCI-21C	\$28.00	\$6.40

NEW! Canon Models

Model	Genuine	TONNY
PGI-5BK	\$22.50	\$8.50
CLI-8BK	\$22.50	\$8.50
CLI-8C/M/Y	\$22.50	\$8.50
CLI-8PC	\$22.50	\$8.50
CLI-8PM	\$22.50	\$8.50

Epson Ink Cartridges

Model	TONNY	Model	TONNY	Model	TONNY
T001	\$18.90	T039	\$10.60	T5594/5/6	\$8.90
T003	\$ 9.90	T0321	\$10.80	T0621	\$8.90
T005	\$18.00	T0322	\$ 7.50	T0631/2/3/4	\$7.50
T007	\$ 9.30	T0323	\$ 7.50	T0731/2/3/4	\$9.50
T008	\$13.00	T0324	\$ 7.50	T0811/2/3	\$9.50
T009	\$15.00	T0422C/M/Y	\$ 9.50	T0814/5/6	\$9.50
T013	\$ 4.50	T0461	\$ 8.90	S020089	\$9.90
T014	\$ 7.90	T0472/3/4	\$ 8.90	S020093	\$5.10
T017	\$ 9.70	T0491/2/3	\$ 8.90	S020097	\$9.00
T018	\$10.60	T0494/5/6	\$ 8.90	S020108	\$6.50
T026	\$ 9.70	T0540/1/2	\$ 8.90	S020110	\$9.50
T027	\$12.40	T0541/2/3/4	\$ 8.90	S020187	\$5.10
T028	\$ 9.70	T0547/8/9	\$ 8.90	S020189	\$6.50
T029	\$10.60	T0561/2/3/4	\$ 8.90	S020191	\$9.00
T038	\$ 9.60	T5591/2/3	\$ 8.90	S020193	\$9.50

HP Ink Cartridges

Model	Genuine	TONNY	Model	Genuine	TONNY
51625A (#25)	\$46.00	\$28.00	C6625A (#17)	\$48.00	\$30.00
51626A (#26)	\$46.00	\$28.00	C6656AA (#56)	\$32.00	\$18.00
51629A (#29)	\$46.00	\$28.00	C6657AA (#57)	\$51.00	\$32.00
51633MA (#33)	\$41.00	\$32.00	C6658AA (#58)	\$37.00	\$26.00
51645A (#45)	\$46.00	\$16.00	C8727A (#27)	\$31.00	\$24.00
51649A (#49)	\$48.00	\$28.00	C8728AA (#28)	\$35.00	\$26.00
C1823D (#23)	\$51.00	\$30.00	C8765WA (#94)	\$31.00	\$27.00
C4841/2/3/4AA (#10)	\$46.00	\$14.00	C8767WA (#96)	\$42.00	\$29.00
C4836/7/8A (#11)	\$48.00	\$14.00	C9363WA (#97)	\$45.00	\$32.00
C5010DA (#14)	\$47.00	\$26.00	C8721WA (#02)	\$28.00	\$11.00
C5011DA (#14)	\$35.00	\$24.00	C8771/2/3WA (#02)	\$16.00	\$10.00
C6578D (#78)	\$51.00	\$30.00	C8774/5WA (#02)	\$16.00	\$10.00
C6614A (#20)	\$44.00	\$24.00	C9351AA (#21)	\$24.00	\$21.00
C6615DA (#15)	\$44.00	\$24.00	C9352AA (#22)	\$27.00	\$23.00

Brother Ink Cartridges

Model	Genuine	TONNY	Model	Genuine	TONNY
LC-21BK	\$30.00	\$7.90	LC-57BK	\$36.00	\$6.90
LC-21C/M/Y	\$17.00	\$7.50	LC-57C/M/Y	\$21.50	\$6.50
LC-02BK	\$21.00	\$7.90	LC-800BK	\$32.00	\$7.90
LC-02C/M/Y	\$11.00	\$7.50	LC-800C/M/Y	\$18.50	\$7.50
LC-04BK	\$28.00	\$7.90			
LC-04C/M/Y	\$16.00	\$7.50			
LC-47BK	\$32.00	\$7.90			
LC-47C/M/Y	\$18.50	\$7.50			

Lexmark Ink Cartridges

Model	Genuine	TONNY	Model	Genuine	TONNY
12A1970	\$48.00	\$32.00	10N0016 (#16)	\$46.00	\$36.00
12A1980	\$56.00	\$35.00	10N0026 (#26)	\$49.00	\$39.00
17G0050	\$46.00	\$32.00	15M0120 (#20)	\$53.00	\$41.00
17G0060	\$53.00	\$35.00	18C0031 (#31)	\$43.00	\$35.00
13400HC	\$53.00	\$36.00	18C0034 (#34)	\$43.00	\$35.00
13619HC	\$52.00	\$38.00	18C0035 (#35)	\$45.00	\$37.00
10N0217	\$33.00	--	18L0032 (#82)	\$47.00	\$39.00
10N0227	\$35.00	--	18L0042 (#83)	\$53.00	\$41.00

Samsung Ink Cartridges

Model	Genuine	TONNY
M40	\$59.00	\$23.00

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Model	Genuine	TONNY	Model	Genuine	TONNY
92298A	\$139.00	\$ 65.00	C8061X	\$165.00	\$ 85.00
C3906A/F	\$ 95.00	\$ 49.00	Q1338A	\$189.00	\$ 95.00
C3903A	\$120.00	\$ 59.00	Q2612A	\$ 95.00	\$ 59.00
C3909A	\$220.00	\$ 95.00	Q2613A	\$ 95.00	\$ 59.00
C4092A	\$ 87.00	\$ 49.00	Q2613X	\$125.00	\$ 69.00
C4096A	\$135.00	\$ 65.00	Q2610A	\$155.00	\$ 75.00
C4127A	\$145.00	\$ 65.00	Q2624A	\$ 96.00	\$ 59.00
C4127X	\$169.00	\$ 80.00	Q5942A	\$190.00	\$ 95.00
C4129X	\$210.00	\$ 95.00	Q5942X	\$279.00	\$125.00
C4182X	\$239.00	\$135.00	Q5949A	\$ 99.00	\$ 59.00
C7115A	\$ 89.00	\$ 49.00	Q5949X	\$169.00	\$ 75.00
C7115X	\$115.00	\$ 65.00	Q6511A	\$169.00	\$105.00

TONNY Colour Toner Cartridges

Printer Model	Model	Genuine	TONNY
HP LJ1500/2500, Canon LBP2410	C9700A (BK)	\$115.00	\$ 65.00
	C9701/2/3A (CYM)	\$135.00	\$ 79.00
HP LJ4600	C9720A (BK)	\$199.00	\$155.00
	C9721/2/3A (CYM)	\$262.00	\$185.00
HP LJ4500, Canon LBP2460/2040	C4191A (BK)	\$119.00	\$ 59.00
	C4192/3/4A (CMY)	\$165.00	\$ 69.00
HP LJ8000	C4149A (BK)	\$150.00	\$ 89.00
	C4150/1/2A (CMY)	\$225.00	\$155.00
Epson C900/1900	S050100 (BK)	\$ 99.00	\$ 79.00
	S050097/98/99 (CMY)	\$210.00	\$119.00
Epson C1000/C2000	S050033 (BK)	\$119.00	\$ 90.00
	S050034/5/6 (CMY)	\$249.00	\$119.00

Samsung Toner

Model	Genuine	TONNY
ML-1210D3	\$ 94.00	\$ 59.00
ML 1650D8	\$185.00	\$105.00
ML-1710D3	\$ 98.00	\$ 59.00
ML-2010	\$103.00	\$ 59.00
ML-2150D8	\$185.00	\$140.00
ML-4100D3	\$ 99.00	\$ 83.00
ML-4500D3	\$119.00	\$ 73.00
ML-6060D6	\$155.00	\$ 93.00
SCX-4216D3	\$ 99.00	\$ 59.00
SCX-5312D6	\$ 95.00	\$ 79.00
SCX-D4200A	\$105.00	\$ 69.00
SF-5100D3	\$ 89.00	\$ 59.00

Brother Toner Cartridges

Model	Genuine	TONNY
TN-100	\$ 29.00	\$23.00
TN-200	\$ 42.00	\$23.00
TN-2025	\$ 74.00	\$59.00
TN-300	\$ 42.00	\$23.00
TN-3060	\$125.00	\$65.00
TN-8000	\$ 43.00	\$23.00
TN-6600	\$ 99.00	\$65.00
TN-7600	\$125.00	\$65.00

Canon Toner Cartridges

Model	Genuine	TONNY
E-31	\$189.00	\$85.00
EP-22	\$ 99.00	\$49.00
EP-25	\$ 99.00	\$49.00
EP-26	\$109.00	\$69.00
EP-32	\$145.00	\$65.00
EP-52	\$185.00	\$80.00
FX-3	\$132.00	\$59.00
CART-303	\$ 83.00	\$59.00
CART-N	\$220.00	\$76.00
CART-U	\$ 99.00	\$69.00
CART-W	\$147.00	\$55.00

Epson Toner Cartridges

Model	Genuine	TONNY
EPL-5700	\$190.00	\$49.00
EPL-5900	\$205.00	\$49.00
EPL-6200	\$215.00	\$49.00

Lexmark Toner Cartridges

Model	Genuine	TONNY
Optra E210	\$129.00	\$59.00
Optra E310	\$225.00	\$69.00
Optra E/E+	\$135.00	\$59.00
X215	\$105.00	\$59.00

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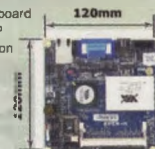
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- GLAN Controller
- TV Out (HDTV)
- LVDS/DVI (optional)
- Mini-ITX (170mm x 170mm)
- Digital Media, Entertainment, Set Top Box



Model: EPIA - EN

Powerful and Flexible Digital Media

- All In One
- VIA C7™ Processor onboard with Integrated UniChrome™ Pro AGP graphics w/MPEG-2 acceleration
- DDRII 400/533
- 1 PCI slot
- Vinyl 6 channel Audio
- 8 USB 2.0 ports
- 1 COM port
- 10/100 LAN
- TV Out
- Mini-ITX (170mm x 170mm)
- KIOSK, Thin Client



Model: EPIA - CN

- All In One
- VIA C3™/Eden™ Processor onboard with Integrated UniChrome AGP graphics w/MPEG-2 Acceleration
- DDR 266
- CardBus/CompactFlash Support
- 1 PCI slot, 1 Floppy Connector
- Vinyl 6 channel Audio
- IEEE 1394 Firewire
- 4 USB 2.0 ports
- 2 COM ports
- VIA 10/100 LAN
- TV Out
- LVDS/DVI (optional)
- Mini-ITX (170mm x 170mm)
- Wireless Media, Kiosk, Set Top Box



Model: EPIA - MII

Hard Working Small&Quiet Systems

- All In One
- VIA Luke CoreFusion Processor with Integrated UniChrome Pro AGP Graphics with MPEG-2/MPEG-4 Acceleration
- DDR 400 DIMM
- 1 PCI slot
- 2 SATA ports
- VIA Vinyl 6 Channel Audio
- 8 USB2.0
- 4 COM ports
- 2 VIA 10/100 Ethernet (1 optional Gigabit)
- 1 Digital I/O 4GPI/4GPO
- LVDS/DVI (optional)
- Mini-ITX Form Factor (170mmx170mm)
- Always-on Point of Sales Applications



Model: EPIA - EK

Digital Media and Entertainment

- All In One
- VIA C3™/Eden™ with Processor onboard Integrated UniChrome AGP graphics w/MPEG-2 Acceleration
- DDR 266
- 1 PCI slot, 1 Floppy Connector
- Vinyl 6 channel Audio
- IEEE 1394 Firewire
- 4 USB 2.0 ports
- VIA 10/100 LAN
- TV Out
- LVDS/DVI (optional)
- Mini-ITX (170mm x 170mm)
- Digital Media and Entertainment



Model: EPIA - M

19" Mini-ITX Rackmount

Model No.: 7677

- 19" 1U Rackmount
- Internal 3.5HDD x 1
- PCI Expansion Slot x 2
- Slim Type CD / DVD x 1
- 45(H) x 484(W) x 400(D)
- Cooling: 2 x 40mm fans
- Power and HDD indicators
- Mini-ITX (170mm x 170mm)
- Power on/off



19 inch

Firewall/VPN/Telephony/Telecom/VoIP Network/Security/Military Application

Model No.: C1B

- 19" 1U Rackmount
- Internal 3.5" HDD x 1
- Internal 2.5" HDD x 1
- PCI Expansion Slot x 1
- Slim CD-rom/DVD-rom x 1
- 18"(W) x 13"(D) x 1.75"(H)
- Mini-ITX (170mm x 170mm)
- Cooling: 2 x 40x28mm fans
- Power on/off and system reset
- Power LAN and HDD indicators



Firewall/VPN/Telephony/Telecom/VoIP Network/Security/Military Application

Model No.: C1E

- 19" 1U Rackmount
- Internal 3.5" HDD x 2
- PCI Expansion Slot x 1
- Slim CD-rom/DVD-rom x 1
- 19"(W) x 14.5"(D) x 1.75"(H)
- Front access USB & LAN ports
- Power LAN and HDD indicators
- Up to 12" x 9.6" ATX size mobo
- Power on/off and system reset
- Cooling: 1 x 97mm blower or 2 x 40x56mm fans



World's Smallest Case

Model No.: 1677

- Color: Black
- Front Port: USB x 2
- Internal 2.5 HDD x 1
- Slim Type CD / DVD x 1
- 60W/80W Power Adaptor
- Nano-ITX (120mm x 120mm)
- Power on/off and system reset
- 82.5mm(H) x 160mm(W) x 163mm(D)



Home Media Center, Set Top Box, Kiosk, Wireless Media

Model No.: 2677

- Color: Black
- Expansion Slot x 1
- Internal 3.5" HDD x 1
- 4cm Cooling Fan x 2
- Slim Type CD / DVD x 1
- 60W/80W Power Adaptor
- Mini ITX (170mm x 170mm)
- Power on/off and system reset
- 63.5mm(H) x 295mm(W) x 272mm(D)



Home Media Center, Set Top Box, Kiosk, Wireless Media

Model No.: 2600

- Color: Black
- Expansion Slot x 1
- Internal 3.5" HDD x 1
- 4cm Cooling Fan x 2
- Slim Type CD / DVD x 1
- 63.5(H) x 295(W) x 272(D)
- Mini ITX (170mm x 170mm)
- 60W/80W Power Adaptor
- Power on/off and System Reset
- USB x 2, Audio x 1, Mic x 1, 1394 x 1, IR Module (Optional)



Set Top Box, Thin Client, Car Entertainment, Smart Mini PC

Model No.: 3677

- Front Port: USB x 2
- Internal 2.5" HDD x 1
- 6cm Cooling Fan x 1
- Slim Type CD / DVD x 1
- 60W/80W Power Adaptor
- Mini ITX (170mm x 170mm)
- Power on/off and system reset
- 65mm(H) x 210mm(W) x 275mm(D)



Set Top Box, Thin Client, Car Entertainment, Smart Mini PC

Model No.: 3688

- Front Port: USB x 2
- Internal 2.5" HDD x 1
- 6cm Cooling Fan x 1
- Slim Type CD / DVD x 1
- 60W/80W Power Adaptor
- Mini ITX (170mm x 170mm)
- Power on/off and system reset
- 65mm(H) x 210mm(W) x 258mm(D)



Stylish Cube Entertainment centers

Model No.: 669

- Expansion Slot x 2
- Internal 3.5" HDD x 1
- 4cm Cooling Fan x 2
- External 3.5" HDD x 1
- External 5.25" HDD x 2
- 200W ATX Power Supply
- Mini-ITX (170mm x 170mm)
- USB2.0 x 2, 1394/Audio/Mic x 1
- 200mm(H) x 225mm(W) x 330mm(D)



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- USB adapter supports Bluetooth headset profile
- Improves sound quality of internet calling with the Noise-cancelling microphone featuring WindSmart™ technology
- Approximately 6 hours talk time make it easy to stay connected
- Freedom to roam up to 10 metres from your internet call or mobile phone
- Convenient USB charging right from your PC



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to make wireless
VoIP calls from your
laptop or PC



Use the .Audio910
to make wireless
calls from your
mobile or PDA

PCAUTHORITY



December 2006

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P4 - 3.2 800 641	\$113	Gigabyte 81865G775	\$112	512M pc133	\$77	Asus GF7100GS 128M PCI-X	\$70	Audigy Value 7.1	\$55
P4 - 2.8 820DUALCORE	\$132	Gigabyte 945PL-S3	\$113	512M DDR 3200	\$55	Asus GF7300GS 256M PCI-X	\$93	Digital Music LX	\$52
P4 - 3.4 800 Dual Core	\$257	Gigabyte 945P-S3	\$179	1G DDR 3200	\$105	Asus GF7600GT 256M PCI-X	\$192	Audigy 4	\$109
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Athlon 64 3500 AM2	\$129	ASUS P5PE-VM	\$92	1G DDR2 5300	\$99	Asus ATI A9250 128M AGP	\$64	X-Fi Platinum	\$278
Athlon 64 3800x2 AM2	\$145	ASUS P5VD2-MX	\$112	Corsair DDR 512M 400\$73		Asus ATI X1300 Pro 256M PCI-X	\$139	Networking	
Hard disks		ASUS P5V-VM-DH	\$127	Corsair DDR 1G kit	\$139	Leadtek A7600GT 256M AGP	\$299	NIC 10/100Mb	\$12
Notebook 40Gb	\$75	ASUS P5VDC-MX	\$80	Corsair DDR 2G kit	\$261	Leadtek PX7600GS 256M PCI-X	\$130	5 port switch 10/100	\$25
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WD 74Gb 10000rpm	\$243	Gigabyte M55SLI-S4	\$132	Geil DDR 1G kit 400	\$128	Gigabyte 7300GS 128M DVI PCI-X	\$99	Netcomm NB600W	\$115
WD 36Gb 10000rpm	\$164	Gigabyte M57SLI-S4	\$199	Geil DDR2 1G kit 667	\$129	Gigabyte 7600GS 256MAGP	\$179	Netcomm LSV40 VoIP	\$43
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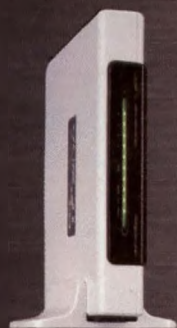
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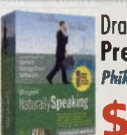
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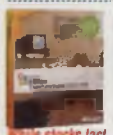
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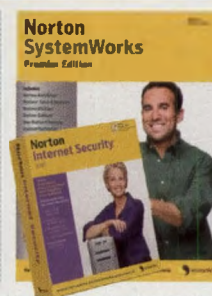
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1-User Pack	\$68	\$59
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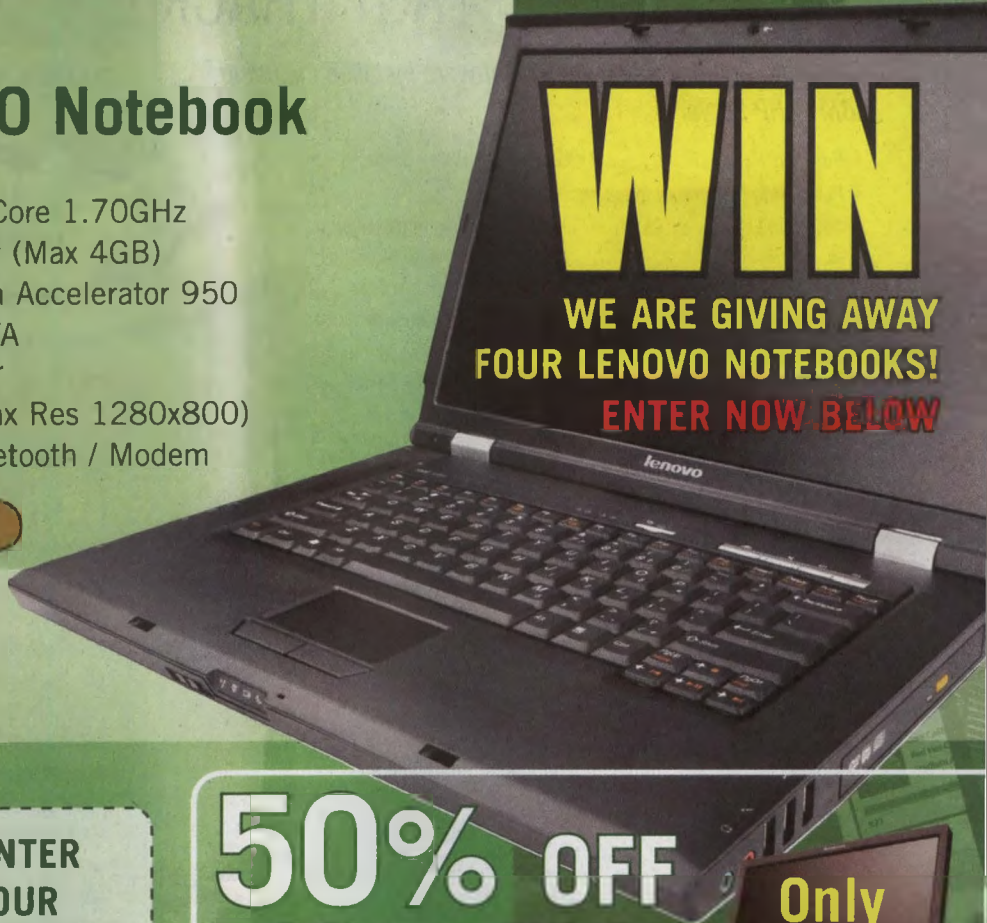
Part Number	0768A72
Processor	Intel Pentium Dual Core 1.70GHz
Memory	1GB DDR2 667MHz (Max 4GB)
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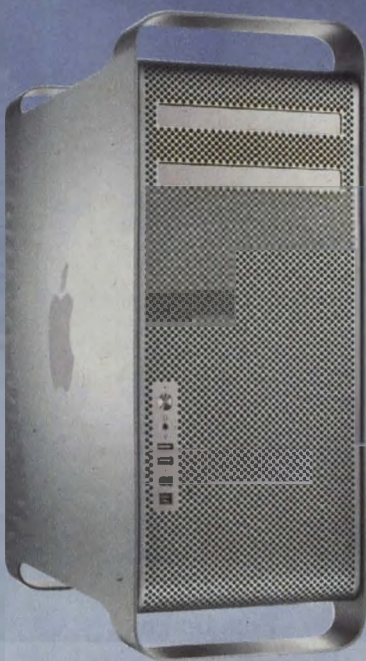
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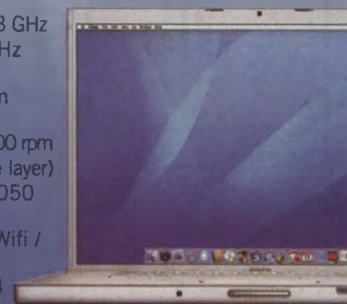
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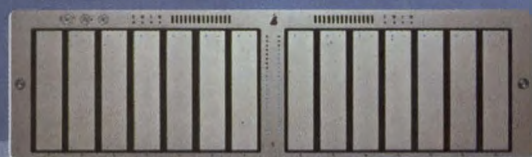
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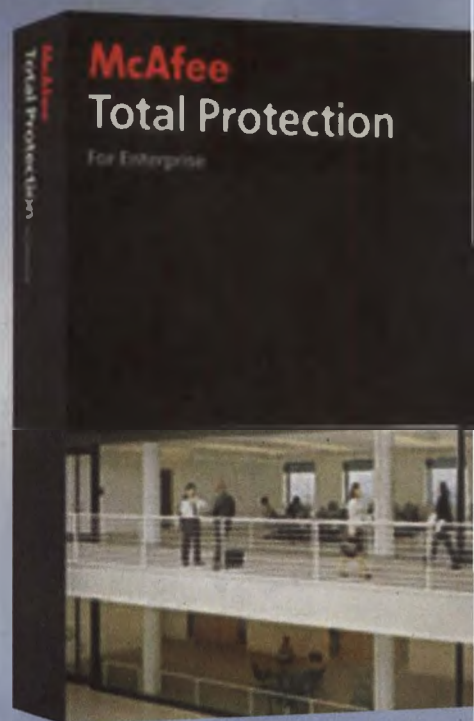
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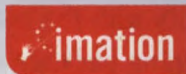
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D-Link

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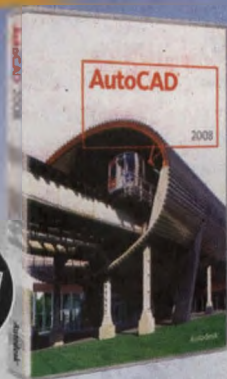


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Autodesk

Fuji Xerox Printers Phaser 4510 A4 Mono Laser Printer

The ultimate A4 mono laser network printer that works harder, works smarter, and always delivers. With unbeatable reliability, advanced intelligence features and exceptional value, it is our most productive A4-size black & white printer.

- Print speed up to 45 ppm
- First Page Out 8 seconds
- Duty Cycle 200,000 pages/month
- Print resolution 1200 x 1200 dpi
- Memory Standard: 128/512 MB RAM
- Paper input capacity standard: 500 sheets


NEW
Poster printing
Booklet printing

\$1462

FXP4510 / Save \$1462

Fuji Xerox Printers WorkCentre 4150 A4 Mono Multifunction Printer

The WorkCentre 4150 multifunction meets the challenges of today's non-stop business world: powerful printing capabilities & an array of tools to create a reliable convenient multifunction that is ready to handle the needs of your busy workgroup.

- Mono print Speed up to 45ppm
- Colour Print Speed up to 30ppm
- First Page out 8 seconds
- Duty Cycle 200,000 ppm
- Print resolution 600 x 600 dpi
- Memory: 256/384 MB + 40GB hard drive
- Paper input capacity standard: 500 sheets

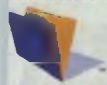

NEW
Two-side printing
Reduce / Enlarge

\$3587

FXP4150 / Save \$758

CORPORATE

DATABASES & NETWORKING



FileMaker.

Manage people, projects, assets and more—the easy way!

Introducing FileMaker Corporate Licensing Program

FileMaker licensing options give you a choice of licensing and maintenance options designed around the way you work. Our goal is to provide you with the easiest software licensing options ever - no points, no complex contracts, just simple options that let you get the software you need at a price you can afford. For corporate or government organizations CSW-IT specialises in offering the Annual Volume License Agreement (AVLA)

Annual Volume Licence Agreement (AVLA)

Who should purchase this type of license?

Corporate or government organisations that need at least 10 licenses of FileMaker software. This option provides an easy, flexible way to save time and money on volume licensing.



How Does it Work?

By purchasing an AVLA you are purchasing an annual right to use the software. At the end of the year, you can choose to renew for the next year, purchase the software or de-install the software. If the option is to purchase then a discount is available for each year the software has been installed.

Benefits

- Purchases can start with a low 10-seat minimum.
- Mix and match platforms, products (including FileMaker Pro, FileMaker Pro Advanced, FileMaker Server, FileMaker Server Advanced, and FileMaker Mobile) and upgrades for larger tier discounts.
- No minimums for adding seats to an existing AVLA.
- Volume licensing savings begin at 13% off single user packages; greater discounts for larger orders.
- The AVLA includes 12 months maintenance.

Call our Licensing experts today on 1300 761 761 to obtain a quote or make further enquiries on FileMaker Licensing for Corporate and Government organisations.

ProCurve HP Switch 2900 Series

The ProCurve Switch 2900 series consists of two switches: the ProCurve Switch 2900-24G with 24 10/100/1000 ports and the ProCurve Switch 2900-48G with 48 10/100/1000 ports. Both have 4 dual-personality ports for 10/100/1000 or mini-GBIC connectivity. In addition, by including four integrated 10-Gigabit Ethernet (two CX4 ports and two X2 slots), the 2900 series offers the most flexible and easy-to-deploy multiple 10-Gigabit stacking and uplinks in its class.



\$4324

HPE3634 / Save \$1743

ProCurve HP Switch 2600 Series

The ProCurve Switch 2600 series is a collection of low-cost, stackable, multi-layer, managed switches with 48, 24, or 8 auto-sensing 10/100 ports and dual-personality ports for 10/100/1000 or mini-GBIC connectivity. The ProCurve Switch 2650-PWR, 2626-PWR, and 2600-8-PWR are IEEE 802.3af-compliant for Power over Ethernet and provide up to 15.4 W per port. A redundant external power supply is also available as an accessory.



\$2876

HPE8164 / Save \$1000

ProCurve HP Switch 2810 Series

The ProCurve Switch 2810 series consists of two switches: the 24-port ProCurve Switch 2810-24G with 20 10/100/1000 ports, and the 48-port ProCurve Switch 2810-48G with 44 10/100/1000 ports. Each switch also has 4 dual-personality ports for RJ-45 10/100/1000 or mini-GBIC fiber Gigabit connectivity.



\$5176

HPE9022 / Save \$877

ProCurve HP Access Point 530

Ideal for branch or satellite office deployments, the ProCurve Access Point 530 is an intelligent edge, dual-radio access point with simultaneous support for IEEE 802.11a and IEEE 802.11g standards, as well as dual IEEE 802.11g radio operation. The 530 access point offers a comprehensive range of industry-proven authentication methods and the latest in standards-based wireless security to assure appropriate and secure access to network resources.



\$1047

HPE4941 / Save \$396

ProCurve Networking
HP Innovation



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csw.com.au



Pick Up Points

9

HP DX7300 CMT Bundle

Processor	Intel Pentium 4 3.2GHz
Memory	1GB DDR2 (Max 4GB)
Video Card	Intel Graphics Media Accelerator 3000
Hard Drive	80GB SATA 7200rpm
Optical Storage	16x DVD Rom
Display	17" L1706 LCD Monitor
Connectivity	10/100 Ethernet
OS	MS Win XP Pro

Includes
HP D2360
Printer


\$1357

HCP5349 / Save \$291

HP DX7300 CMT Bundle

Processor	Intel Core 2 Duo 1.8GHz
Memory	1GB DDR2 (Max 4GB)
Video Card	Intel Graphics Media Accelerator 3000
Hard Drive	80GB SATA 7200rpm
Optical Storage	CDRW/DVD Rom Combo
Display	19" L1906 LCD Monitor
Connectivity	10/100 Ethernet
OS	MS Win XP Pro

Includes
HP C3180
All in One


\$1597

HCP5350 / Save \$216

HP DX2300 Mini Tower Bundle

Processor	Intel Pentium 4 3.20GHz
Memory	1GB PC2-5300 DDR2 667MHz
Video Card	Intel Graphics Media Accelerator 3000
Hard Drive	80GB SATA 7200rpm
Optical Storage	SATA CDRW/DVD Rom Combo
Display	17" L1706 LCD Monitor
Connectivity	10/100 Ethernet
OS	MS Windows Vista Business


\$1214

HCP5339 / Save \$163

HP DX2300 Mini Tower Bundle

Processor	Intel Core 2 Duo 1.80GHz
Memory	1GB DDR2 SDRAM 667MHz
Video Card	Intel Graphics Media Accelerator 3000
Hard Drive	80GB SATA 7200rpm
Optical Storage	SATA DVD+-RW
Display	19" L1906 LCD Monitor
Connectivity	10/100 Ethernet
OS	MS Windows Vista Business



Bonus
10 Pack
DVD+R
Media

\$1478

HCP5335 / Save \$221

HP XW4400 Workstation

Part Number	RP580PA
Processor	Intel Core 2 Duo 1.86GHz
Memory	1GB DDR2 SDRAM
Video Card	NVIDIA Quadro NVS 285
Hard Drive	160GB SATA 7200rpm
Optical Storage	DVD Rom
Connectivity	Gigabit Ethernet
OS	MS Windows XP Pro
Monitor not included	


\$1886

COW5701 / Save \$163

HP XW4400 Workstation

Part Number	RJ700PA
Processor	Intel Core 2 Duo 2.40GHz
Memory	2GB PC2-5300 DDR2
Video Card	NVIDIA Quadro FX 1500
Hard Drive	2x 250GB SATA 7200rpm
Optical Storage	16X DVD+-RW DL
Connectivity	Gigabit Ethernet
OS	MS Windows Xp Pro
Monitor not included	


\$3476

COW5704 / Save \$109

HP L2045W LCD MONITOR

Part Number	RB145AA
Display Size	20.1 inch
Max Resolution	1680 x 1050
Response Time	5ms
Brightness	300 cd/m2
Contrast Ratio	2000:1


\$574

HCD0024 / Save \$85

HP L1906 LCD MONITOR

Part Number	PX850AA
Display Size	19 inch
Max Resolution	1280 x 1024
Response Time	8ms
Brightness	250 cd/m2
Contrast Ratio	500:1


\$370

HCD0012 / Save \$79

CORPORATE

NOTEBOOKS & PRINTERS

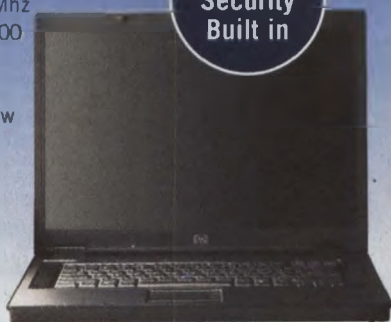
HP NX8420 Notebook

Processor Intel Core 2 Duo T5500 1.66Ghz
Memory 1GB DDR2 RAM 667Mhz
Video Card ATI 256MB Radeon X1600
Hard Drive 80GB HDD 5400RPM
Optical Storage Dual Layer DVD+/-RW
Display 15.4" WXGA BrightView
 1280 x 800
Connectivity 10/100 Ethernet /
 Modem / Wifi / BT
Operating System MS Windows XP Pro

\$1772

HPX0408 / Save \$847

**Fingerprint
Security
Built in**



HP NX7300 Notebook

Processor Intel Celeron M 4301.73Ghz
Memory 512MB DDR2 SDRAM
Video Card Intel GMA 950
Hard Drive 80GB 5400rpm
Optical Storage Dual Layer DVD+/-RW with
Display 15.4" WXGA BrightView
 1280 x 800
Connectivity 10/100 Ethernet / Modem / Wifi
Operating System MS Windows Vista Business

\$1128

HCN0153 / Save \$21

**Bonus
8 Cell
Battery**



HP NX9420 Notebook

Processor Intel Core 2 Duo T7200 2.0GHz
Memory 1GB DDR2 667Mhz
Video Card ATI Mobility Radeon x1600 with 256MB
Hard Drive 120GB 5400rpm SATA
Optical Storage Dual Layer DVD+/-RW
 with LightScribe
Display 17.0" WSXGA+
Connectivity Gigabit Ethernet /
 Modem / Wifi / BT
Operating System MS Windows
 Vista Business

\$2768

HCN0170 / Save \$213

**Bonus
8 Cell
Battery**



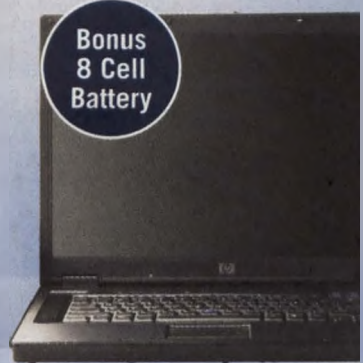
HP NW8440 Notebook

Part Number RM749PA
Processor Intel Core 2 Duo T7400
 2.16Ghz
Memory 1GB 667MHz DDR2
Video Card ATI Mobility FireGL V5200
 with 256MB
Hard Drive 100GB 7200rpm
Optical Storage Dual Layer DVD+/-RW
Connectivity Gigabit Ethernet / Modem
 / Wifi / BT
Operating System MS Windows XP Pro

\$4137

HCN0182 / Save \$162

**Bonus
8 Cell
Battery**



HP LaserJet P3005n Printer

The HP LaserJet P3005 Printer series is the ideal solution for small and medium-sized offices. With its ease of use, low total cost of ownership and robust performance, this worry-free printer allows you to rest easy and concentrate on your business.

\$1459

HPL7814 / Save \$139



HP LaserJet 4250 Printer

Professional dependability and versatility

Print: up to 43 ppm (A4)/45 ppm (letter), up to 1200 x 1200 dpi black; Up to 200,000 pages per month duty cycle; 1 Hi-Speed USB 2.0 port, 1 IEEE 1284-B compliant parallel port.

\$1690

HPL5400 / Save \$109



HP Color LaserJet 3000 Printer

The HP Color LaserJet 3000 meets the needs of IT-managed businesses that are looking at consolidating their mono laser and inkjet used in small work teams, into one easy-to-use, reliable colour device. It is also an ideal workmate for small businesses that need colour for in-house marketing to better sell their business and increase profits.

\$1138

HPL7533 / Save \$111



HP LaserJet 4700N Printer

The HP Color LaserJet 4700 keeps your workgroup pace with print speeds up to 31 ppm; commands your audience's attention with brilliant colours that leap off the page, especially with the new HP LaserJet ColorSphere Toner; performs a variety of paper-handling functions so you don't have to; and can endure whatever you throw its way.

\$3137

HPL7492 / Save \$362



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Pick Up Points

11

HP iPAQ 4540 Mobile Media Companion

Enjoy your favourite music, videos, photos and games wherever you go. The smart, stylish, design features a large anti-glare touch screen and a scroll wheel for one-handed navigation and side buttons to instantly launch media applications.



\$50*
Cashback

\$448

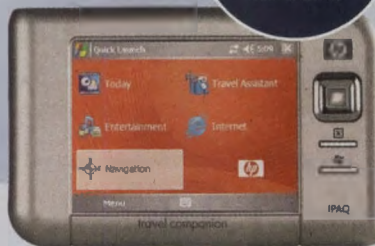
COQ0142 / Save \$51



HP iPAQ RX5765 Travel Companion

Slim and stylish this GPS navigator combines personal entertainment features and travel assistant options so you can make the most of all your travels.

- Microsoft Windows Mobile 5.0 means improved productivity with more efficient data management. Windows Media Player 10 Mobile lets you download and enjoy MP3s and videos, as well as access streaming audio, video and Internet radio.
- TomTom Navigator 6 with your choice of regional maps.



TomTom Navigator 6.0 in built

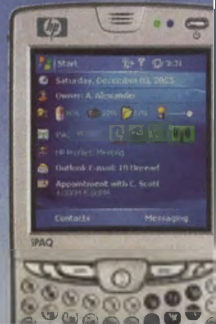
\$623

COQ0143 / Save \$76

HP iPAQ HW6965 Mobile Messenger

Staying connected takes on a whole new meaning

The HP iPAQ hw6965 Mobile Messenger provides the features and solutions you need for an outstanding mobile e-mail and messaging experience. Having the ability to read, respond to, and manage e-mails while you're on the road or in long meetings, has a significant impact on your ability to stay productive. The HP iPAQ Mobile Messenger provides all the essentials to keep your business running when you are away from the office: phone, e-mail, and more secure access to business-critical information.



\$1176

COQ0155 / Save \$123

TomTom Navigator 6.0 included

HP iPAQ RW6828 Handheld

Now there is even more reason to buy either the iPAQ rw6828 Mobile Messenger stand alone or bundle

The HP iPAQ rw6800 Multimedia Messenger series is pure personality in a small light form that has it all.

Rw6828 bundle (includes additional Battery, 1GB mini SD card, stylus and flip cover)



\$100*
Cashback

\$795*

COQ0137 / Save \$104

\$100*
Cashback

\$926*

COQ9998 / Save \$73

*Offer valid from 1 May 07 to 31 July 07. Cashback available via redemption from HP. See www.hp.com.au/promotions for details.

HP OfficeJet Pro L7380 All in One

Low cost, fast laser-printing and All-in-One functionality

The high-performance HP Officejet Pro L7380 All-in-One combines print, scan, copy and fax functions in one device that delivers fast laser-quality printing with a lower cost-per-page than multifunction lasers.

[^]\$100 Cashback offer valid until 30/06/2007
- for details see csw.com.au/promotions



\$100*
Cash back

\$368

HPS7380 / Save \$31

HP OfficeJet Pro 7580 All in One

High volume, fast, low cost laser-quality printing & All-in-One productivity

Get more than just fast print, fax, scan and copy capabilities. The high-performance HP Officejet Pro L7580 All-in-One comes with built-in networking and produces laser-quality printing at a lower cost than multifunction lasers.

[^]\$100 Cashback offer valid until 30/06/2007
- for details see csw.com.au/promotions



\$100*
Cash back

\$458

HPS7580 / Save \$41

HP Scanjet N6010 Document Sheet-feed Scanner

Increase productivity with fast duplex document scanning

Scan documents at up to 18 ppm scan both sides of the page in a single pass at up to 36 ipm. Increase productivity with unattended scanning using a 50-page document feeder. Easily scan a wide variety of paper types and sizes, from business cards to A4 documents.

[^]Bonus HP K550 Business Inkjet printer \$329 Value



BONUS HP K550 Printer

\$978

HPS1984 / Save \$121

HP Scanjet 8270 Document Flatbed Scanner

Perform fast document scanning at up to 25 ppm

- load up to 50 pages into the automatic document feeder for easy and reliable single or double-sided scanning. Get high quality image scanning too, including 35 mm slides and negatives.

[^]Bonus HP K550 Business Inkjet printer \$329 Value



BONUS HP K550 Printer

\$1398

HPS8271 / Save \$102

ADOBE CREATIVE SUITE 3

Adobe Creative Suite 3 software combines shared productivity features such as visual asset management and access to useful online services with essential creative tools that let you design content for print, the web, film and video, and mobile devices.

- An unprecedented choice of creative toolsets provides the freedom to move across whichever media you choose whenever the inspiration strikes
- Tight integration across components of the software allows you to work more productively than ever
- New levels of innovation in favorite design tools expand creative options and streamline workflows



DESIGN		WEB		PRODUCTION PREMIUM	MASTER COLLECTION
STANDARD	PREMIUM	STANDARD	PREMIUM		

Adobe InDesign® CS3	•	•			•
Adobe Photoshop® CS3 Extended		•		•	•
Adobe Photoshop CS3	•				
Adobe Illustrator® CS3	•	•	•	•	•
Adobe Acrobat® 8 Professional	•	•	•		•
Adobe Flash® CS3 Professional		•	•	•	•
Adobe Dreamweaver® CS3		•	•		•
Adobe Fireworks® CS3			•		•
Adobe Contribute® CS3			•		•
Adobe After Effects® CS3 Professional				•	•
Adobe Premiere® Pro CS3				•	•
Adobe Soundbooth® CS3				•	•
Adobe Encore® CS3				•	•

PRICING	DESIGN		WEB		PRODUCTION PREMIUM	MASTER COLLECTION
	Standard	Premium	Standard	Premium		
FULL PACKAGED PRODUCT	MAC: ALD0070	MAC: ALD0068	MAC: ALD0078	MAC: ALD0076	MAC: ALD0074	MAC: ALD0072
	WIN: ALD0071	WIN: ALD0069	WIN: ALD0079	WIN: ALD0077	WIN: ALD0075	WIN: ALD0073
	\$1824	\$2737	\$1520	\$2433	\$2585	\$3802
UPGRADE	MAC: ALG1032	MAC: ALG1028	MAC: ALG1048	MAC: ALG1044	MAC: ALG1040	MAC: ALG1036
	WIN: ALG1033	WIN: ALG1029	WIN: ALG1049	WIN: ALG1045	WIN: ALG1041	WIN: ALG1037
	\$1368	\$2433	\$1216	\$2128	\$1824	\$3041
UPGRADE	MAC: ALG1030	MAC: ALG1026	MAC: ALG1046	MAC: ALG1042	MAC: ALG1038	MAC: ALG1034
	WIN: ALG1031	WIN: ALG1027	WIN: ALG1047	WIN: ALG1043	WIN: ALG1039	WIN: ALG1035
	\$607	\$911	\$607	\$759	\$1216	\$2128

For any multiple licence requirements on Adobe products please contact our SMB call centre or 1300 658 600



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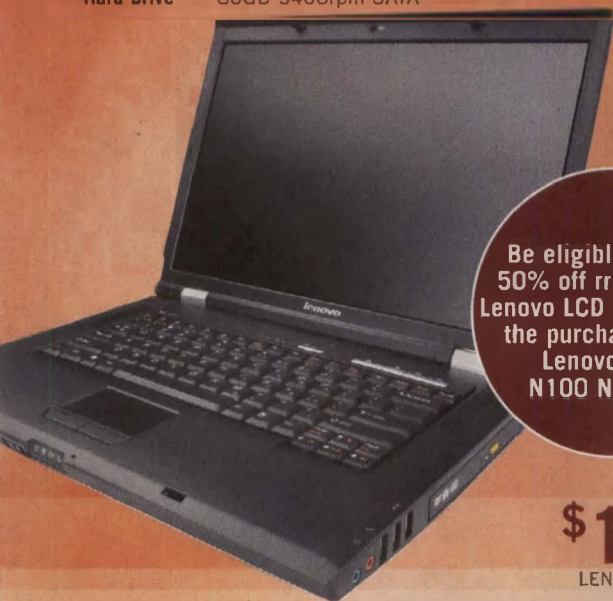
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Pick Up Points

DESKTOP & NOTEBOOK COMPUTERS
Lenovo 3000 N100 Notebook

Part Number	0768A72	Optical Storage	DVD-RW Multiburner
Processor	Intel Pentium Dual Core 1.70GHz	Display	15.4 WXGA TFT (Max Res 1280x800)
Memory	1GB DDR2 667MHz Max 4GB	Connectivity	Ethernet / Wifi / BT / Modem
Video Card	Intel Graphics Media Accelerator 950	OS	MS Win Vista Business
Hard Drive	80GB 5400rpm SATA		



Be eligible to save 50% off rrp on a 19" Lenovo LCD monitor with the purchase of this Lenovo 3000 N100 Notebook

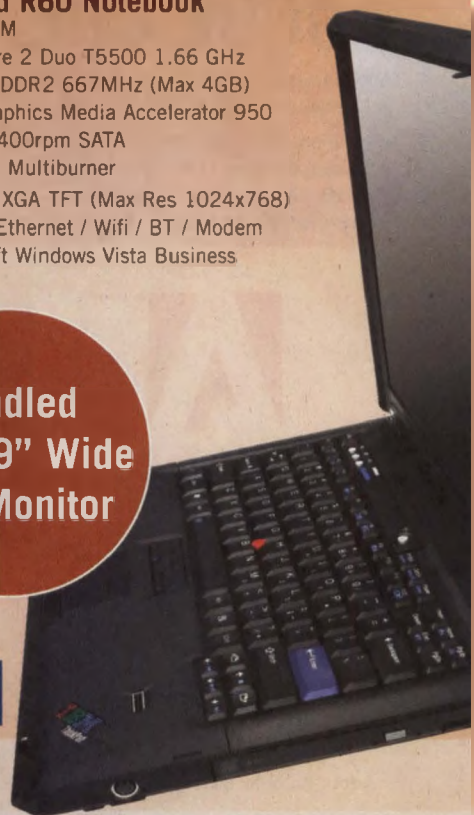
\$1345

LEN0150 / Save \$104

Lenovo ThinkPad R60 Notebook

Part Number	9456LKM
Processor	Intel Core 2 Duo T5500 1.66 GHz
Memory	512MB DDR2 667MHz (Max 4GB)
Video Card	Intel Graphics Media Accelerator 950
Hard Drive	80GB 5400rpm SATA
Optical Storage	DVD-RW Multiburner
Display	15 inch XGA TFT (Max Res 1024x768)
Connectivity	Gigabit Ethernet / Wifi / BT / Modem
Operating System	Microsoft Windows Vista Business

Bundled with 19" Wide LCD Monitor


lenovo
\$1687

IBB1364 / Save \$61

Lenovo 3000 J110

Part Number	7393A15
Processor	Intel Pentium D Processor 2.80GHz
Memory	512MB DDR2 PC2 4200 (Max 2GB)
Video Card	Intel Graphics Media Accelerator 3000
Hard Drive	80GB SATA 7200rpm
Optical Storage	DVD-RW Multiburner
Connectivity	Gigabit Ethernet
Operating System	Microsoft Windows XP Pro

17" Monitor (IBH6852) \$349

Lenovo 3000 J115

Part Number	7387A12
Processor	AMD Athlon 64 X2 3800+ 2GHz
Memory	1GB PC2-4200 DDR2 533MHz (Max 2GB)
Video Card	nVidia GF 6100 Integrated Graphics
Hard Drive	250GB SATA 7200rpm
Optical Storage	DVD-RW Multiburner
Connectivity	Gigabit Ethernet
Operating System	Microsoft Windows Vista Business
Monitor	19" L192W Wide LCD Monitor

Lenovo 3000 J110

Part Number	7393A13
Processor	Intel Core 2 Duo 1.80GHz
Memory	1GB PC2-4200 DDR2 (Max 2GB)
Video Card	ATI Radeon X1300
Hard Drive	250GB SATA 7200rpm
Optical Storage	DVD-RW Multiburner
Connectivity	Gigabit Ethernet
Operating System	Microsoft Windows Vista Business
Monitor	17" L171 LCD Monitor



Monitor not included

\$862

LED0020 / Save \$17



19" Monitor Included

\$1263

IBB1324 / Save \$31



17" Monitor Included

\$1555

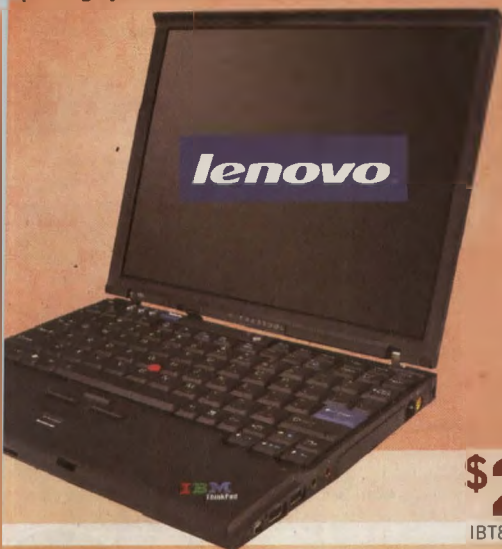
IBB1385 / Save \$43

BUSINESS

DESKTOP & NOTEBOOK COMPUTERS

Lenovo ThinkPad X60

Part Number	1708P8M
Processor	Intel Core 2 Duo T5600 1.83GHz
Memory Ram	512MB DDR2 667MHz Max 4GB
Video Card	Intel Graphics Chipset
Hard Drive	80GB SATA 5400rpm
Optical Storage	Optional
Display	12.1 XGA TFT Max Res 1024 x 768
Connectivity	Gigabit Ethernet / Wifi / BT / Modem
Operating System	Microsoft Windows Vista Business

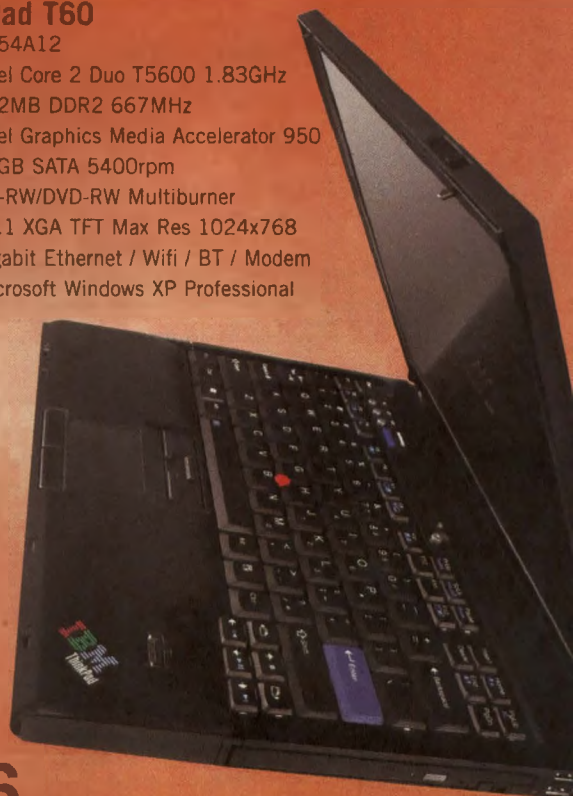


\$2876

IBT8005 / Save \$123

Lenovo ThinkPad T60

Part Number	1954A12
Processor	Intel Core 2 Duo T5600 1.83GHz
Memory Ram	512MB DDR2 667MHz
Video Card	Intel Graphics Media Accelerator 950
Hard Drive	80GB SATA 5400rpm
Optical Storage	CD-RW/DVD-RW Multiburner
Display	14.1 XGA TFT Max Res 1024x768
Connectivity	Gigabit Ethernet / Wifi / BT / Modem
Operating System	Microsoft Windows XP Professional

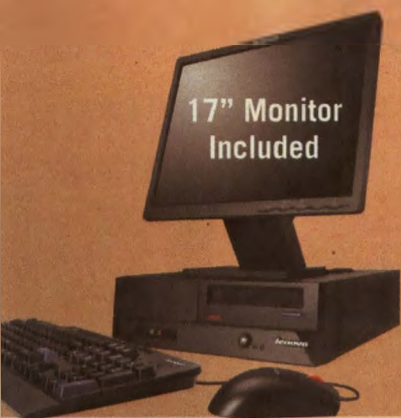


\$2376

IBT9678 / Save \$123

Lenovo ThinkCentre A55

Part Number	9640A12
Processor	Intel Core 2 Duo Proc 1.8GHz
Memory Ram	1GB DDR2 Max 4GB
Video Card	Intel Graphics Chipset (Max Res 2048 x 1536)
Hard Drive	160GB SATA
Optical Storage	DVD-RW Multiburner
Connectivity	Gigabit Ethernet
Operating System	MS Windows Vista Business
Monitor	17" L171 LCD Monitor

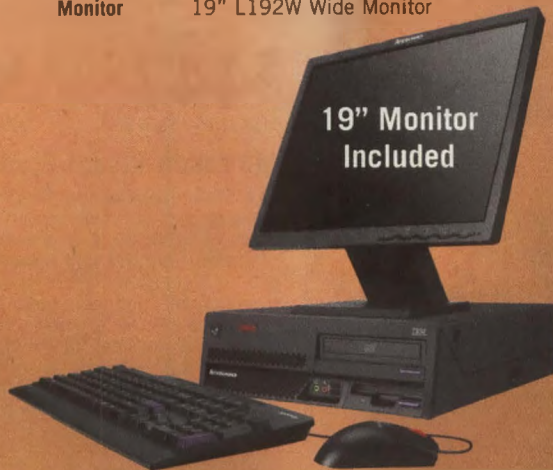


\$1496

IBB1311 / Save \$52

Lenovo ThinkCentre M55

Part Number	88089BM
Processor	Intel Core 2 Duo Proc 1.86GHz
Memory Ram	1GB DDR2 SDRAM Max 4GB
Video Card	Intel Graphics Media Accelerator 3000
Hard Drive	80GB SATA
Optical Storage	CD-RW/DVD-ROM Combo Drive
Connectivity	Gigabit Ethernet
Operating System	MS Windows XP Pro
Monitor	19" L192W Wide Monitor



lenovo

\$1757

IBB1337 / Save \$91

Lenovo ThinkCentre A53

Part Number	8982A14
Processor	Intel Pentium D 925 3.00GHz
Memory Ram	512MB PC 5300 DDR Max 2 GB
Video Card	Intel Graphics Media Accelerator 3000
Hard Drive	80GB SATA 7200rpm
Optical Storage	DVD-RW Multiburner
Connectivity	Gigabit Ethernet
Operating System	Microsoft Windows XP Pro
Monitor	19" L192W Wide Monitor



\$1146

IBB1250 / Save \$152



1300 658 600

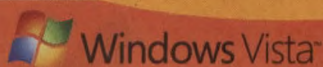


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Pick Up Points

15



Why buy Windows Vista?

It's more secure.

Windows Vista is more secure than prior versions of Windows. Help protect private information and remove spyware with Windows Defender™. Keep children safer online than with previous versions of Windows with improved, customisable Parental Controls.

New Phishing Filter in Internet Explorer® 7.

It's simple.

Find applications, documents, e-mail, photos and more in a snap with Instant Search. Add tags and meta data to files for quicker access. Add Windows Sidebar Gadgets – customisable mini-applications that display news and more at a glance.

It's reliable.

Help protect your personal data against loss with new automated scheduled backup in Enhanced Backup and Restore. Quickly add memory to a PC using Ready Boost for Windows Vista. Easily synchronise information between computers and devices with Sync Center.

It's fun.

Edit and share memories easier using the new Photo Gallery. Edit HD home movies and easily publish to a video DVD using Windows Movie Maker and Windows DVD Maker. Take gaming to the next level with ultra-vivid DirectX® 3-D graphics. Windows Media Centre functionality now in most versions.

BONUS GIFT



Microsoft LifeChat LX-3000 (wired)

OR



HP DJF380 Multi-Functional Printer

OR



Microsoft LifeCam VX-3000 (wired)

Receive one of 10,000 complimentary gifts when you buy any specially marked Microsoft Office 2007 or Windows Vista™ product from the list below, this tax time between 15/5/07 to 31/7/07 or while stocks last.

Windows Vista Home Basic Full & Upgrade versions

Windows Vista Home Premium Full & Upgrade versions

Windows Vista Business Full & Upgrade versions

Windows Vista Ultimate Full & Upgrade versions

Office 2007 Home & Student

Office 2007 Standard Full & Upgrade Versions

Office 2007 Small Business Full & Upgrade Versions

Office 2007 Professional Full & Upgrade Versions

For full terms and conditions visit: www.csw.com.au/promotions.



Why buy Microsoft Office 2007?

Create great-looking documents.

- Create great-looking documents faster and easier using improved picture, charting and graphics tools with SmartArt Graphics.
- See formatting changes in one click using Live Preview.
- More stable and consistent formatting (bullets and numbering).
- New shading and colour in Excel® data fills that make eye-catching spreadsheets.

Easily find commands that help to get you started.

- Streamlined User Interface.
- Menus to help you find commands when you need them.
- Screen tips, integrated Help, step-by-step online tutorials.

Get tasks done with confidence and security.

- Recover documents lost while working during inopportune system problems through the Document Recovery Tool.
- Remove comments, hidden text and personal information from documents with Document Inspector.
- Convert documents, spreadsheets and presentations into PDF and XPS file formats so you can easily share them with others.
- Help block viruses and stop spam with improved junk e-mail filter and anti-phishing tools in Office Outlook® 2007.

Organise information and manage communications.

- View, organise and search e-mail, calendar and tasks at the same time using the To-Do Bar in Office Outlook® 2007.

Microsoft Windows Vista Business

Work efficiently with confidence every day.

Windows Vista Business is for businesses of all sizes. It enables individuals and organisations to lower their PC management costs, improve security, enhance productivity and stay better connected.

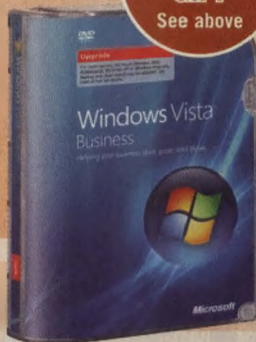
Microsoft

Upgrade
\$348

MSA5107 / Save \$31

Full
\$515

MSA5106 / Save \$50



***BONUS GIFT**
See above

Microsoft Office Small Business 2007

Work efficiently with easy-to-use productivity, contact management and marketing software.

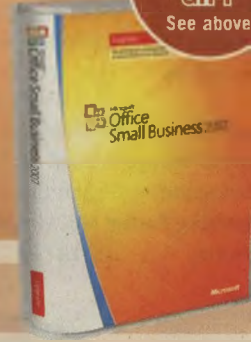
Save time and stay organised with Microsoft Office Small Business 2007. Work effectively, manage customer information in one place, and produce marketing materials and campaigns in-house.

Upgrade
\$447

MSA6106 / Save \$52

Full
\$691

MSA6105 / Save \$58



***BONUS GIFT**
See above

Microsoft Windows Small Business Server (SBS) 2003 R2

Small businesses need to access, update, share and store ever-increasing amounts of information. Windows Small Business Server (SBS) 2003 R2 delivers those capabilities and more. SBS 2003 R2 comes with a collection of features that can help you create a secure small business network and meet your storage, printing, collaboration, e-mail, Internet connectivity, and faxing requirements. It also supports workers who need to access your network using mobile devices. You can connect up to 75 workstations to an SBS 2003 R2 network.

\$931

MSS9996 / Save \$113

Call 1300 658 600
For Licensing on Small Business Server



Microsoft Visual Studio 2005 Professional Edition

The comprehensive tool for developers working alone or in small teams to deliver the full range of applications on the Microsoft platform. Intuitive and powerful, Visual Studio Professional 2005 speeds the development, debugging and deployment of applications for Windows, the Web, and mobile devices. Easily create and deploy client applications. Automatically publish and maintain applications and their dependencies with integrated ClickOnce support.

Upgrade
\$852

MSA9847 / Save \$93

Full
\$1248

MSA9846 / Save \$139



BUSINESS

BUSINESS PRINTERS & SCANNER

\$150*
Cash back

Fuji Xerox Printers DocuPrint C2100 A4 Colour Laser Printer

The DocuPrint C2100 redefines colour network printing and is the ideal choice for workgroups that require a high quality printer at a low total cost of ownership.

- 25ppm black 17ppm colour.
- First page out in 17 seconds
- Memory Max 128 MB/ 640MB Ram
- Print Res: 9600x600 dpi
- Up to 60,000 pages maximum monthly duty cycle
- Connectivity - Ethernet 10/100 Base-TX, IEEE1284 parallel and USB 2.0

BONUS
Duplex
Value \$248
Limited Time

\$100*
Cash back



*See csw.com.au/promotions for full details

Fuji Xerox Printers Phaser 3428DN

A4 Mono Laser Printer

- A4 Mono Laser Printer
- 30ppm (Letter) / 28ppm (A4)
- Memory size 32MB upgradeable to 288MB
- 1200x1200dpi printing Up to 65,000 pages/month
- Ethernet 10/100BaseTX

\$644

FXP3429 / Save \$104

HOT



Fuji Xerox Printers DocuPrint C3055DX A3 Colour Office Printer

The world's smallest A3 size mono printer—that also prints in colour. Its versatility makes it perfect for small to medium workgroups that demand performance, flexibility and professional print quality.

\$646

FXP2100 / Save \$427

Fuji Xerox Printers

\$2368

FXP3055 / Save \$382

\$200*
Cash back

Fuji Xerox Printers DocuPrint C2090FS

A4 Colour Multifunction Printer

- Great Print Speed of up to 5ppm Col 25ppm monochrome
- Copy Speed of up to 5ppm col/20ppm mono
- Scan Resolution: Optical: 1200 x 1200 dpi Enhanced: up to 4800 x 4800 dpi
- Software: DocuWorks 5.0, Acrobat Reader 5.05
- Paper Input Capability of 200 sheets
- Memory (Std/Max): 96MB / 352MB

\$1136

FXP2090 / Save \$182

\$200*
Cash back



Fuji Xerox Printers DocuPrint C3210DX

A4 Colour Laser Printer

- Black print 30ppm: Colour print 25ppm
- Memory 28MB upgradeable to 640MB
- Resolution 1200 x 1200 dpi
- Paper capacity 700 sheets
- Ethernet 10/100Base-TX Parallel, USB 2.0, MPC (Multi-protocol Network Card)

\$1136

FXP3211 / Save \$182

Low cost per print

Copy / Scan / Print

Seven Scanning Functions

*See csw.com.au/promotions for full details

*See csw.com.au/promotions for full details

Fuji Xerox Printers Phaser 8550DP A4 Colour Solid Ink Printer

- Up to 85,000 pages maximum monthly duty cycle
- Print speed of 30'ppm
- First page out in 5 seconds
- Resolution 600 x 600 dpi
- Memory 256MB standard, 1GB MAX
- Adobe PostScript 3 & PCL5c
- Duplex printing

\$2653

FXP8550 / Save \$532

Fuji Xerox Printers DocuScan C4250

A3 Network Colour Scanner

They can be used as add-ons to your customers' DocuPrint C2535A, C4350, C525A colour laser printers, as stand-alones or in an attractive bundle. Featuring networked or direct usage, plug and play usability, LCD screens for previewing scans, mixed original copying*/scanning support, and built in duplex, we've made high quality scanning, copying* and printing easier than ever.

\$3236

FXP4250 / Save \$394

Easy to use!

Environmentally Friendly



1300 658 600



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Pick Up Points

17

NEW



Lexmark E450DN

Quality Printing Performance

With industry-leading technology that maximises performance, reliability, and environmental efficiency, the new Lexmark E450dn delivers a uniquely superior printing experience to the small and medium workgroup.

Small enough to serve as a personal desktop printer, but robust enough to handle shared workloads of 6 users, the E450dn is flexible to meet your printing needs. Utilising the latest technology available, with an Industry First Digital Light Processing (DLP) Printhead. It's quicker, smaller, more reliable and quieter than traditional laser units.

- Black Print Speed 7ppm
- Duty Cycle 85,000 ppm
- Up to 2400 Image Quality
- Powerful 400 MHz processor and 64 MB
- Up to 800-sheet paper capacity



Lexmark X342n A4

Network-ready, with optional input capacity of up to 800 sheets, the X342n is a reliable team player for your small-workgroup environment.

Advanced workflow functions include high-speed faxing, colour scanning in multiple formats, and fast laser printing at up to 25 ppm. Besides its exceptionally low acquisition price, it also offers high-yield 6K cartridges to help drive down your total cost of printing.

Fax / Scan / Print

Network-Ready

\$455

LEX0142 / Save \$194



Lexmark E120n A4

Affordable and Reliable Printing where space is a premium

- Up to 20 ppm (Letter), 19 ppm (A4)
- 600 x 600 dpi, 1200 Image Quality
- As fast as 8 seconds time to first page
- 16MB memory standard
- PCL 6 emulation standard
- Ethernet-Ready 10/100BaseTX

Network-ready

Adjustable print resolution settings

\$915

LEX4501 / Save \$174



Lexmark C534DN

Outstanding colour quality at the right price

When it comes to colour printing, the quality of the image is key. That's why the Lexmark C534DN utilises Lexmark's unique 4800 Colour Quality resolution to produce brilliant business colour every time. Not only can the printer adjust the dot size to deliver the perfect image, but it can also adjust the dot shape. When combined with Lexmark's new spherical chemically processed toners you are ensured of crisp, high quality output at up to 21 ppm colour and 22 ppm mono.

Network-Ready

Saving up to 50% of printing costs

\$1564

LEX5340 / Save \$298



Lexmark X854E

An affordable path to workgroup efficiency

Lexmark's high-performance X850e and X854e monochrome wide-format MFPs are specially designed to meet the needs of your rigorous business applications.

With a time-to-first-page of less than 5 seconds, plus lightning fast output speeds of 55 pages per minute your workgroups will now spend less time waiting and more time working.

Work Easy Smart Fast

A3 Colour Flatbed Scanner

\$249

LEX2404 / Save \$39

\$18274

LEXB540 / Save \$3720



Lexmark X642E

Easy-to-use, Integrated Multifunction Printer - In Touch with business needs

Easy-to-Use: Lexmark e-Task 5.7-inch (15.5 cm) monochrome touch screen provides access to print, copy, fax and scan-to-email functions. **Versatile:** Specialized and general office copy, fax, scan and print is consolidated on one multifunction printer supporting an array of business output application needs. **Scanning:** Up to legal size documents (8.5 x 14", 216 x 355 mm) with up to 600x600 dpi in black and up to 300x300 dpi in color with an up to 50 page Automatic Document Feeder (ADF)

Network-Ready

Print / Copy / Fax / Scan

\$2375

LEX2601 / Save \$453

\$6757

LEX3772 / Save \$1291

A3 Copy & Print

Duty Cycle - 120,000

BUSINESS

PUBLISHING & BUSINESS PRINTERS

QuarkXPress 7 Design Bundle: Tools for simply better design

Tools for simply better design, production and collaboration

QuarkXPress 7 is a tool that will give you amazing creativity and rock-solid productivity. Industry experts are united in calling QuarkXPress 7 one of the most significant upgrades the application has ever seen. Much more than a page layout tool, QuarkXPress provides proven performance with graphics and colour management, text processing, Web-page design, XML output and more! QuarkXPress is powerful layout software with an intuitive, versatile interface that lets you combine writing, editing, and typography with colour and pictures to produce dynamic final output. QuarkXPress is widely used by magazines, newspapers, advertising agencies, typesetters, printers, corporate publishers, design firms, catalogue houses, book publishers, and form designers. It is also used by businesses with publishing requirements.

Buy or upgrade to QuarkXPress 7 and you will not only get 160 new and enhanced features, a printed user manual, free training DVD, and free technical support*, but you will also receive 3 Linotype font licenses of your choice**, PANTONE 100 Top Color swatch, and Quark XPert Tools Pro software – together valued at around \$500 – FREE! "QuarkXPress 7 is second to none," said Macworld. MacUser declares "Quark fans will be delighted." And Computer Arts says "Believe the hype. This is unquestionably the most significant upgrade to QuarkXPress since version 3.0."

* Free technical support only available in English. ** Terms & Conditions apply.

Software Licensing on Quark also available at Competitive prices Call 1300 658 600 for a quote



FREE - Linotype font licenses

FREE - Quark XPert Tools Pro software

FREE - PANTONE 100 Top Color swatch



Offer available 10th April 2007 - 31st July 2007



HP LaserJet P2015 A4 Mono Printer

Fast, reliable black and white laser printer for small offices

Compact, easy to use and manage, the HP LaserJet P2015 printer is a fast and reliable black-and-white printer that's perfect for the small office environment.

- Print speed: Up to 27 ppm (letter), 26 ppm (A4)
- Print Up to 1200 x 1200 dpi HP FastRes 1200
- Processor: 400 MHz, Memory 32 MB, expandable to 288 MB
- Interfaces: Hi-Speed USB 2.0 port

\$531

HPL0366 / Save \$58

HP LaserJet 3055

A4 Mono All-in-one Printer

Benefit from full functionality with the compact, flatbed HP LaserJet 3055 All-in-One. Versatile and reliable, it lets you produce professional documents quickly with fast print, fax, scan and copy functions, plus network connectivity.

- Print: 18ppm, first page out less than 8 sec, 1200 x 1200 dpi 264MHz, 64MB RAM
- Copy: Flatbed 600 x 600 dpi, 24 bit depth
- Scan: 600 x 600 dpi optical resolution (9600 dpi enhanced) colour scanning
- Fax: 33.6kbps

\$670

HPL6530 / Save \$129



HP LaserJet 2840 AiO

A4 Colour Printer

Your 3-in-1 business centre for professional colour laser print, copy and scan (network-ready)

- 19ppm mono and 4ppm colour
- 50 sheet Automatic Document Feeder, 125 sheet multi purpose tray, optional 250 sheet second tray
- 96MB RAM, 264MHz processor
- 600 x 600 dpi with ImageRet 2400
- Friendly LED screen

\$1417

HPL3905 / Save \$82

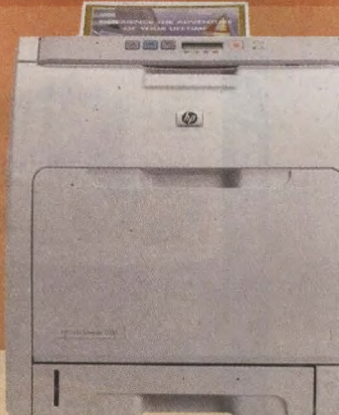
HP Color LaserJet 2700 Printer

Now you can afford to print in colour. Count on fast speeds of 20 ppm in mono and 15 ppm in colour with this reliable HP Color LaserJet. Easy to use and maintain, and HP ImageRet 2400 and HP ColorSphere toner ensure high quality, consistent results.

- Print: Up to 20 ppm black, up to 15 ppm col.
- Up to 600 x 600 dpi
- black & up to 600 x 600 dpi colour
- Up to 55,000 duty cycle; 64MB
- Hi-Speed USB 2.0 (compatible with USB 2.0 specifications)

\$955

HPL8724 / Save \$44



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Pick Up Points

19

CorelDRAW Graphics Suite X3

Streamline your workflow with one complete package

CorelDRAW Graphics Suite X3 is trusted by busy designers and business users to transform ideas into professional results – fast! With this comprehensive graphics suite, users can confidently tackle a wide variety of projects – from logo creation and web graphics, to multi-page marketing brochures, or eye-catching signs.

*for purchases made before May 31.

See www.csw.com.au/promotions for terms and conditions

Corel Painter X

Limited Edition Paint Can

Corel Painter X, the world's most powerful Natural-Media software, offers artists and photographers professional art & design tools that are unmatched by any other product. Delivering the next-generation art studio.

Corel Painter X blurs the line between traditional and digital art like never before.



\$734

COR8703 / Save \$115

Ulead DVD Movie Factory 6 Plus

Ulead DVD MovieFactory 6 Plus is a easy to use disc authoring and burning software for today's digital lifestyle. The easiest way to turn video, data, music or photos into standard or High-Definition DVDs with professional-style personalized menus.



^\$100
Cash back

**BONUS 40GB
EXTERNAL
HARD DRIVE VIA
REDEMPTION**

Upgrade
\$277

COR8325 / Save \$72

Full
\$628

COR8334 / Save \$121

Upgrade
\$143

ULE0107 / Save \$22

Full
\$176

ULE0106 / Save \$23

Corel Paint Shop Pro Photo XI

The easiest way to get professional-looking photos - fast!

Corel Paint Shop Pro Photo XI is the ideal choice for anyone who wants extraordinary photos. Filled with one-of-a-kind photo tools, automatic photo fixes, precision editing controls and 100s of unique special effects filters, Paint Shop Pro Photo is sure to please everyone with a digital camera. Fix brightness, color and photo imperfections; create photo compositions full of depth and imagination; give photos a unique and exciting look, and there's a new built-in photo organiser to keep all your photos in order. Plus, with a Learning Center to help first time users get started, Paint Shop Pro Photo is the easiest way to get professional-looking photos - fast!

*for purchases made before May 31.

See www.csw.com.au/promotions for terms and conditions

^\$30
Cash back

Upgrade
\$91

COR8937 / Save \$68

Full
\$143

COR8932 / Save \$56

^\$50
Cash back

Ulead VideoStudio 11 Plus

Easy and Powerful Video Editing + DVD Authoring

Ulead VideoStudio 11 Plus is video editing and DVD authoring software for anyone who wants to easily produce professional-looking videos, slideshows and DVDs. Create amazing High-Definition HD DVDs. Work quickly with timesaving Wizards, or express your creativity with hands-on tools. Share your movies everywhere, from iPod to YouTube to the latest Home Theater systems. Award-winning VideoStudio sets the standard for powerful features and ease of use.



NEW

Upgrade
\$97

ULE0109 / Save \$19

Full
\$178

ULE0108 / Save \$21

COREL™

BUSINESS

SECURITY & APPLE HARDWARE

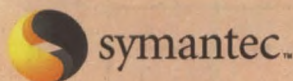
Norton 360

Norton 360 delivers all-in-one security for everything computer users care about, providing automatic protection from fraudulent Web sites, identity theft, viruses, spyware, and other online threats. It also helps keep your PCs tuned for peak performance and protects important files by allowing you to back them up automatically and restore them at any time.

- PC Security
- Transactional security
- Back up and restore - INCLUDES 10GB of ONLINE STORAGE
- PC Tune Up

Norton 360

All-In-One Security



5 User

\$158

SYM9745 / Save \$42

10 User

\$275

SYM9746 / Save \$75

Apple MacBook

Processor	Intel Core 2 Duo 2 GHz
Memory	1GB DDR II 667 MHz (2GB max)
Video Card	Intel GMA 950
Hard Drive	120GB SATA 150 5400 rpm
Optical Storage	DVD±RW (+R double layer)
Monitor	13.3" TFT 1280 x 800 (WXGA)
Connectivity	Gigabit Ethernet / Wifi / BT
Operating System	Apple MacOS X 10.4

\$2324

APPO252 / Save \$75

Apple iMac

Processor	Intel Core 2 Duo 2.16 GHz
Memory	1GB DDR II 667MHz (3GB Max)
Video Card	ATI Radeon X1600 PCI 128 MB Express x16
Hard Drive	250GB SATA 150
Optical Storage	DVD±RW (+R double layer)
Display	Flat panel display 20" TFT active matrix
Connectivity	Gigabit Ethernet / Wifi / BT
Operating System	Apple MacOS X 10.4

\$2186

APPO230 / Save \$113

Norton Ghost

- Back up your digital music, photos, financial documents, and everything else on your computer in one easy step.
- Recover files or folders quickly, even if your operating system won't start.
- Work and play while Norton Ghost automatically makes backups in the background.
- Customize backup schedules, optimize storage media, and make on-demand backups at the click of a button.

\$85

SYM9682 / Save \$15

Norton Internet Security 2007

Stay protected from the latest online threats when connecting to the Web. Norton Internet Security 2007 automatically protects you from spyware, viruses, worms, phishing Web sites, and hackers, before they can cause harm.

5 User

\$127

SYM9721 / Save \$23

10 User

\$209

SYM9733 / Save \$41

Apple MacBook Pro

Processor	Intel Core 2 Duo 2.16 GHz
Memory	1GB DDR II 667MHz (3GB max)
Video Card	ATI Mobility Radeon X1600 256 MB
Hard Drive	120GB SATA 150 5400 rpm
Optical Storage	DVD±RW (+R double layer)
Monitor	15.4" TFT active matrix 1440 x 900 (WXGA+)
Connectivity	Gigabit Ethernet / Wifi / BT
Operating System	Apple MacOS X 10.4

\$3063

APP0151 / Save \$136

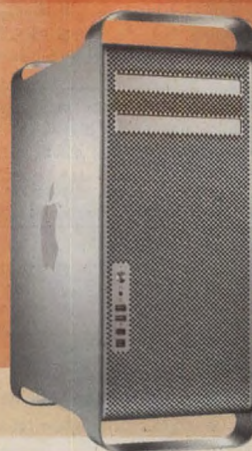
Apple Mac Pro

Processor	2 x Intel Dual-Core Xeon 2.66 GHz
Memory	1GB DDR II ECC 667MHz (16GB Max)
Video Card	NVIDIA GeForce 7300 GT 256MB PCI Express x16
Hard Drive	250 GB SATA 300
Optical Storage	DVD±RW (+R double layer)
Display	Optional
Operating System	Apple MacOS X 10.4

\$3876

APPO234 / Save \$123

Authorised Reseller



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Pick Up Points

21

Client Server Security for SMB 3.5

Integrated Protection from Spyware and Malware

Worry-Free Security Solutions automatically protect data and resources against increasingly sophisticated Internet threats, 24/7.

Client Server Security for Small and Medium Business helps:

- Protect confidential data from theft or modification
- Preserve availability of computers and networks for work, not threats
- Prevent spyware from distracting or harming employees

Benefits	Protection	Feature
All-in-one Integrated Defense 	Single solution offers protection from spyware and other emerging threats	• Blocks spyware, viruses, Trojans, worms, rootkits and bots • Eliminates cost and effort of purchasing and managing threat-specific products • New! Stops spyware and other emerging threats such as rootkits, and bots from stealing data or slowing business • Prevents office computer and network slowdown or crashes caused by malware
Automatic Threat Protection 	Responds rapidly without manual intervention to stop malware 24/7	• Unique technology that automatically responds to virus outbreaks • Automated removal of malware from PCs and desktops • Real-time protection against Internet threats including spyware "drive-by downloads" • Detects and prioritizes top Microsoft vulnerabilities and outbreaks
Zero Administration 	Protects with hands-off administration for lower total cost of ownership	• Saves time and effort with single solution to install • Easily monitors network PC health status from one, Web-based "traffic signal" dashboard

5 User

10 User

\$498
\$748

For license requirements of more than 10 users please call our SMB call centre today on 1300 658 600

TRM8621 / Save \$45

TRM8622 / Save \$68



Client Server Messaging Security for SMB 3.5

Integrated protection from Internet threats

Worry-Free Security Solutions automatically protect data and resources against increasingly sophisticated Internet threats, 24/7.

Client Server Messaging Security for Small and Medium Business helps:

- Protect confidential data from theft or modification
- Preserve availability of computers and networks for work, not threats
- Prevent inappropriate content from distracting or harming employees

Benefits	Protection	Feature
All-in-one Integrated Defense 	Single solution offers protection from spyware and other emerging threats	• Stops spyware, viruses, spam, phishing and inappropriate content with multi-layer protection • Eliminates cost and effort of purchasing and managing threat-specific products • New! Stops spyware and other emerging threats such as rootkits, and bots from stealing data or slowing business • Prevents office computer & network slowdown or crashes caused by malware
Automatic Threat Protection 	Responds rapidly without manual intervention to stop malware 24/7	• Unique technology automatically responds to virus outbreaks • Automated removal of malware from PCs and desktops • Real-time protection against Internet threats including spyware "drive-by downloads" • New! Server-side spam quarantine minimizes employee exposure to spam • Detects and prioritizes top Microsoft vulnerabilities and outbreaks
Zero Administration 	Protects with hands-off administration for lower total cost of ownership	• Saves time and effort with single solution to install • Easily monitors network PC health status from one, Web-based "traffic signal" dashboard

5 User

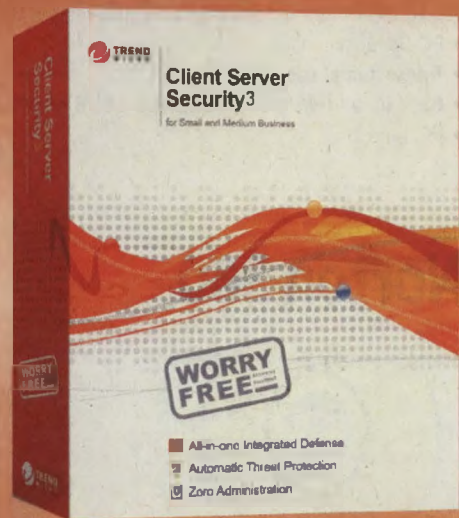
10 User

\$637
\$916

For license requirements of more than 10 users please call our SMB call centre today on 1300 658 600

TRM8623 / Save \$58

TRM8624 / Save \$82



"Trend Micro's automatic threat prevention, protection and remediation capabilities were extremely effective and required zero user intervention" – West Coast Labs, evaluation Client Server Solutions, May 2006.



SECURITY

NeatSuite for SMB 3.5

Stops Internet threats with comprehensive protection from the gateway to the desktop

NeatSuite for SMB is an easy-to-manage security suite that protects your Internet gateway, mail servers, files servers, and desktops from damage by hackers, spyware, spam, viruses, bots and phishing attacks. Unlike competing SMB security suites, NeatSuite saves considerable time and resources by automating threat prevention, protection, and cleanup to dramatically simplify management.

Small and medium businesses rely on NeatSuite for the following reasons:

- Protects confidential data from theft or modification
- Preserves availability of network, computers, and servers for business not malware
- Prevents malicious or inappropriate content from disrupting business
- Blocks spam and spyware at the gateway before it enters your network
- Filters URLs at the gateway to prevent phishing fraud

Trend Micro Worry-Free Security Solutions Comparison

Integrated Defense	Client Server Messaging Security for SMB 3.5	Client Server Security for SMB 3.5	NeatSuite for SMB*
Award-winning antivirus	✓	✓	✓
New! Integrated anti-spyware	✓	✓	✓
New! Detects and removes rootkits	✓	✓	✓
New! Blocks bot attacks	✓	✓	✓
Anti-spam defense on Exchange server	✓	—	✓
Anti-phishing/identity theft protection	✓	—	✓
Content filtering	✓	—	✓
Vulnerability assessment	✓	✓	✓
Desktop firewall	✓	✓	✓
Stops internet threats at the gateway	—	—	✓

Benefits	Protection	Feature
Secures multiple protection points from spam, spyware, rootkits, bots, phishing, harmful URLs and more	Comprehensive Security for the Gateway, Server, and Desktop	• New! Stops emerging threats such as bots and spyware related rootkits from stealing data or performance cycles • Scans unprotected protocols—including SMTP, HTTP, FTP and POP3—that are exploited by attackers to carry malicious payloads • Filters content and URLs for inappropriate or malicious content • Stops multiple threats from entry at gateway and desktop
Responds rapidly without manual intervention to stop malware 24/7	Automatic Threat Protection and Removal	• IntelliTrap blocks unknown malware disguised by compression • Outbreak Defense stops spread of new viruses or worms • Automatic removal of malware from PCs and desktops including hidden rootkits • Real-time spyware protection stops "drive-by downloads" when users surf the Web • New! Server-side spam quarantine limits employee exposure • Detects and prioritizes
Simplifies administration and management to save time and money	Lower TCO	• Saves time and effort with easy deployment and management at gateway and desktop layers • Monitors network PC health status from one, Web-based "traffic signal" dashboard • Remote management of gateway security through Web-based console • Complements existing firewall and VPN solutions at the gateway by providing an essential front line of defense

For licence requirements less than 50 users please call our SMB call Centre today on 1300 658 600

For licence requirements of more than 50 users please call our licensing experts today on 1300 761 761



InterScan VirusWall 6

All-in-one software security solution that blocks viruses, spyware, spam and other threats at the Internet gateway

Viruses, spyware, spam, and inappropriate content can disrupt business operations, and impact employee productivity. These threats enter the company hidden inside email or Web pages, consuming system and network resources and driving up support costs. In addition, phishing attacks use fraudulent email for identity theft, while some spyware steals financial or other confidential information.

InterScan VirusWall is the most comprehensive Internet gateway software security solution available. Backed by the innovator and leader in gateway antivirus, Trend Micro, this solution saves time and money by reducing support calls and increasing the productivity of employees and preserving the availability of network resources.

KEY BENEFITS

- Improves protection: Integrated gateway security blocks multiple threats including: viruses, spyware, spam, phishing, botnets, and inappropriate content
- Simplifies administration: One Web-based console for set-and-forget management
- Improves productivity: Reduces spam and provides flexible policies for Web use
- Stops outbreaks early: Prevents spread of malware before threat signatures are available



*** Source: IDC, Worldwide Antivirus 2005-2009 Forecast and Analysis: Antivirus Evolves from Product to Feature, Doc# 34567, December 2005.**

For license requirements less than 50 users please call our SMB call Centre today on 1300 658 600

For license requirements of more than 50 users please call our licensing experts today on 1300 761 761



1300 658 600



csw.com.au



Pick Up Points

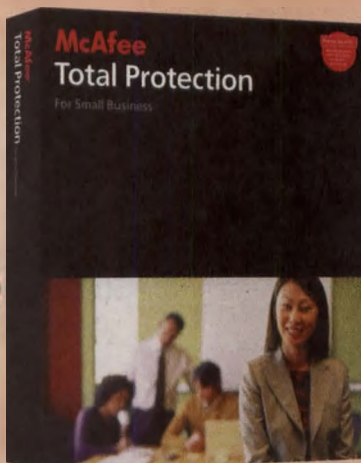
McAfee Total Protection for Small Business

The last security decision a small Business will ever need to make

Broad coverage security for small and mid-size business isn't a dream anymore. Stop juggling standalone products. Switch to our automated, all-in-one, software-as-a-service. McAfee Total Protection for Small Business gives you continuous, up-to-date protection. Management is powerful and easy from our web-based management console with automatic protection 24x7, even for PCs not connected to the Internet.

Includes Desktop Security :

- Anti-virus,
- Anti spyware
- Desktop Firewall



1 Year Subscription

1 Year Gold Support

McAfee®

McAfee Total Protection for Small Business Advanced

Are you sure your business is getting all the coverage it needs?

The last security decision you will ever need to make. Headache-free, broad-coverage security isn't just a dream anymore. Stop juggling standalone products. Switch to our automated, all-in-one, software-as-a-service. McAfee® Total Protection for Small Business gives you continuous, up-to-date protection. Management is powerful and easy from our web-based management console with automatic protection 24x7, even for PCs not connected to the Internet.

Includes ENHANCED Desktop Security :

- Anti-virus
- Anti spyware
- Desktop Firewall
- Mail Server Anti-Virus
- Hosted Mail Server Security with Spam Filtering managed by McAfee

**Added
Email
Security**



Total Protection Advanced requires that you own a unique email domain and a mail server with a static IP address

1 Year Subscription

1 Year Gold Support

5 User
\$241

MCF2173 / Save \$59

10 User
\$438

MCF2174 / Save \$112

25 User
\$992

MCF2175 / Save \$258

5 User
\$363

MCF2170 / Save \$87

10 User
\$682

MCF2171 / Save \$168

25 User
\$1598

MCF2172 / Save \$402

Netgear RangeMax NEXT Wireless Router (WNR834B)

RangeMax NEXT wireless routers and adapters deliver maximum bandwidth and wireless coverage up to 270Mbps. Steady-Stream connections enable simultaneous use of voice, data, and multimedia applications throughout the home. Elegant preset internal antenna design and 11n-True-Test testing and tuning, ensures optimal out-of-box performance.

**Up to
270Mbps**

\$206

NTG7935 / Save \$73

Netgear Super G Wireless ADSL Router with 4-port switch (DG834GT)

Lets you instantly and safely download large files, video conference, and distribute and play high-quality digital movies, photos, and MP3's. Protects your network against intruders. Super G for extra speed and range.

HOT

\$224

NTG7301 / Save \$65

Netgear RangeMax Wireless Router (WPN824)

NETGEAR's RangeMax Wireless Router is powered by 7 smart antennas which adapt on-the-fly to interference, eliminating dead spots and delivering up to 10x more wireless coverage and speed than basic 802.11g routers. RangeMax MIMO (Multi-In, Multi-Out) technology is 100% 802.11b/g compatible and provides legacy devices with up to 50% improvement in performance.

\$121

NTG7317 / Save \$28

Netgear Wireless Router Bundle

This complete kit sets you free on your notebook or desktop from being tied up to Ethernet cables. Enjoy broadband internet connection sharing and access to network resources up to 54Mbps. Double firewall provides superior protection from hackers. High level encryption ensures confidentiality and prevents unauthorised access to your network.

**HOT
Bundle**

\$105

NTG7274 / Save \$24

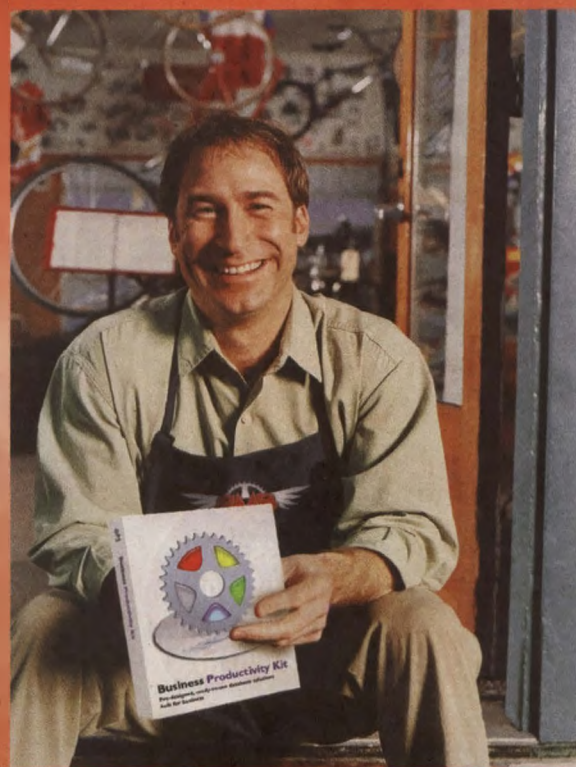
NETGEAR

See how easy it is

for your small business customers to manage information and instantly make their businesses more productive

with FileMaker Pro!

Discover the #1 easy-to-use database for Small Businesses: FileMaker Pro 8.5 and the Business Productivity Kit!



#1 Easy-to-Use Database

For more information including product, pricing and special promotions visit:

www.filemaker.com/au/csWSmb
or call: 1300 658 600

Finally, an easy-to-use database software for Small Businesses!

Why do so many small businesses choose FileMaker? FileMaker has been helping small businesses dream BIG for more than 20 years. FileMaker gives them the tools they need to easily manage people, projects, assets, and more! It's the #1-selling easy-to-use database. And for good reason, it works as hard as they do!

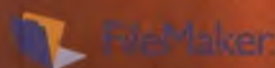
Software designed to manage business tasks!

FileMaker comes with pre-designed, ready-to-use small business database solutions designed to tackle the most-common challenges facing small businesses today, including:

- Managing contacts and companies in one place
- Sending targeted personalised mailings to customers
- Generating and tracking job quotes
- Producing invoices and integrating with accounting software
- Processing sales orders and printing shipping labels
- Organising products and inventory
- Tracking projects and production

Download a FREE 30-day trial of FileMaker Pro 8.5 today and receive the Business Productivity Kit absolutely FREE!

www.filemaker.com/au/solutions/csWSmb



Full	Upgrade	5 User	5 User Upgrade
\$453	\$261	\$1798	\$1053
FIL1000 / Save \$46	FIL1001 / Save \$38	FIL1003 / Save \$198	FIL1004 / Save \$143

1300 658 600

CSW.com.au

Pick Up Points

My Book World Edition (Network) 500GB

Designed for home users, creative professionals, workgroups, small offices and anyone looking for shared storage, WD's My Book World Edition offers a surprisingly simple and secure way to access and share data, photos, and music at home, in the office and anywhere in the world—even when your local computer is turned off. Use WD's unique Data OnHand feature to browse through remote folders, open, edit and save files as though they are local to your system. My Book World Edition combines 500 GB of networked storage, backup software, and remote access software to make it the most versatile and powerful product in its class.



Access your
data from
anywhere in
the world

\$383

WDD0086 / Save \$17

ProCurve HP Switch 2510-24

The ProCurve Switch 2510-24 is a managed, Layer 2, 24-port 10/100 switch with 2 dual-personality Gigabit ports providing 10/100/1000-T or mini-GBIC connectivity. The 2510-24 is fanless, ensuring quiet operation and making it ideal for deployment in open spaces. And it offers a basic Layer 2 feature set, including access security and basic traffic prioritization. Designed to cost-effectively meet the needs of small and growing networks, the 2510-24 brings commercial-grade quality to all businesses at an affordable price.



\$562

HPE4955 / Save \$37

Lifetime
Warranty

ProCurve HP Switch 1800-8G

The ProCurve Switch 1800-8G is a small form factor, 8-port 10/100/1000 switch. The ProCurve Switch 1800 series enables increased network capabilities and control vs. unmanaged switches, with support for fundamental networking protocols such as trunking, VLANs, and traffic prioritization. Both switches are managed via an intuitive Web interface. The ProCurve Switch 1800 series is ideal for businesses making the transition from unmanaged connectivity to managed networks without added cost or complexity.



Lifetime
Warranty

\$276

HPE9029 / Save \$23

My Book Essentials (USB) 250GB

They're your photos ... your music ... your videos ... your important files. Make extra room for them and keep them safe on My Book Essential Edition USB 2.0 external hard drive from WD. Easy to set up, easy to use -- this drive is all about simplicity. Plug it into your computer's USB 2.0 port and start saving. It's so simple and integrated that the drive even turns on and off with your computer. With just the essential features for add-on storage it's perfect for all your precious digital assets.

320GB (WDD0084) \$188

500GB (WDD0085) \$255



NEW

WD Western
Digital

\$141

WDD0083 / Save \$9

ProCurve HP Switch 1800-24G

The ProCurve Switch 1800 series consists of two Web-managed switches. The ProCurve Switch 1800-24G is a 22-port 10/100/1000 switch with 2 dual-personality ports for RJ-45 10/100/1000 or mini-GBIC fiber Gigabit connectivity.



Lifetime
Warranty

\$692

HPE9028 / Save \$57

Procurve HP Wireless Access Point 420WL

Extend wireless network access to mobile users without compromising network security. Choice of IEEE 802.11i, Wi-Fi Protected Access 2 (WPA2), or WPA: locks out unauthorised wireless access by authenticating users prior to granting network access; robust Advanced Encryption Standard (AES) or Temporal Key Integrity Protocol (TKIP) encryption secures the data integrity of the wireless traffic



Lifetime
Warranty

ProCurve Networking
HP Innovation

\$528

HPE8131 / Save \$100

USB & KVM

Comsol SecureID Drive 2GB

The Comsol SecureID drive features a unique security function that uses PC authorisation to secure your personal data. One time setup for authorised computers eliminates the cumbersome task of entering a password each time you need to view or retrieve data from the flash drive. The Comsol SecureID requires no software installation and leaves no trace on any computer.

1GB (COM0312) \$33



\$66

COM0313 / Save \$6

ServerLink Altitude 16 Port KVM

The ServerLink Altitude offers a 19" rackmountable solution with PS/2 & USB support for your server and console. With its independent cascade port, multiple units can be daisy-chained up to 16 levels without losing any ports. Its fully featured, menu-driven OSD offers more intuitive and convenient control.

4 Port (SER0016) \$437

8 Port (COM9164) \$587



\$876

SER0010 / Save \$123

Comsol flashIT2 Drive 8GB

Available up to 8GB, the Comsol flashIT2 USB 2.0 flash drive is the ideal choice for your portable storage needs. The flashIT2 allows you to transfer your documents, presentations, pictures, music and more between work, home or any other place. With its durable and slim aluminium casing and extra security features, you can carry around all your data with confidence.

1GB (COM0108) \$27

2GB (COM0109) \$48

4GB (COM9162) \$115



\$183

COM0315 / Save \$16

ServerLink Dual 4 Port KVM

The ServerLink Dual series of KVM switches provide a simple yet cost effective solution to control up to 4 multi-platform computers. Offering support for PS/2 and USB it allows you to access, control, boot and reboot multiple USB-enabled multimedia computers using only one set of keyboard, monitor, mouse and a set of speakers and microphone.

2 Port (COM9152) \$156



\$217

COM9153 / Save \$32



1300 658 600

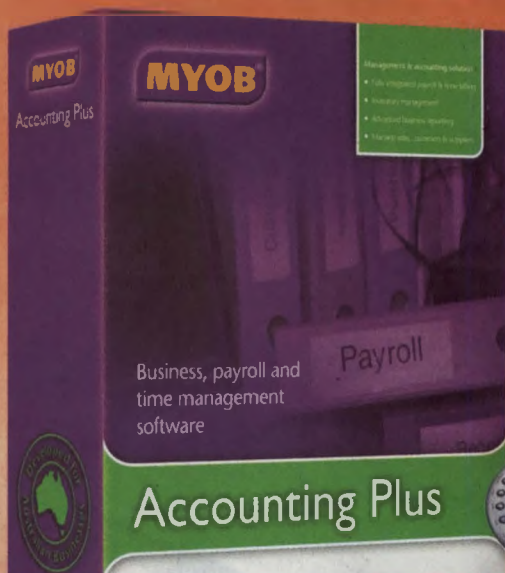


csw.com.au



Pick Up Points

27



MYOB Accounting Plus16

Business, payroll and time management software for Australian businesses with employees. MYOB Accounting Plus is Australia's leading choice for business with employees. Proudly developed and designed for Australian businesses, MYOB has created an easy to use program with integrated payroll, time billing and inventory management software which allows you to:

- Automate your payroll
- Bill for your time
- Control inventory
- Process sales and purchases
- Manage receivables and payables
- Track GST and BAS
- Prepare budgets
- Email your quotes and invoices
- Comprehensive business reporting and more



BONUS Microsoft Wireless Laser Desktop 4000 Via Redemption. Bonus offer commences on 13 May 2007.

MYOB

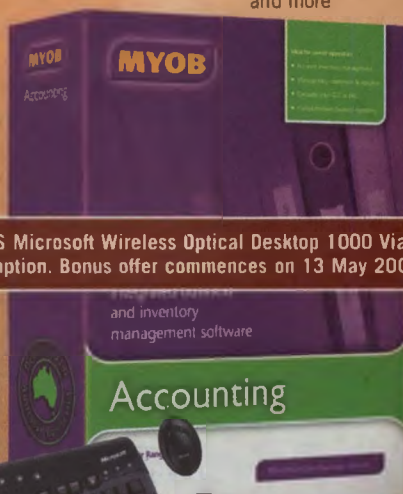
Upgrade
\$296
MYB0068 / Save \$53

Full
\$473
MYB0062 / Save \$122

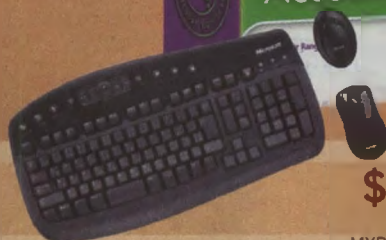
MYOB Accounting 16

Complete Inventory and Business Management software for Australian businesses. For owner operators. MYOB Accounting helps you manage your businesses requirements including inventory; by tracking, back-ordering, buying and building what you need, how you need. MYOB Accounting has been designed and built for Australian conditions by Australia's leading business software supplier to allow you to:

- Control inventory
- Process sales and purchases
- Manage receivables and payables
- Handle your banking requirements
- Track GST and BAS
- Prepare budgets
- Email your quotes and invoices
- Comprehensive business reporting and more

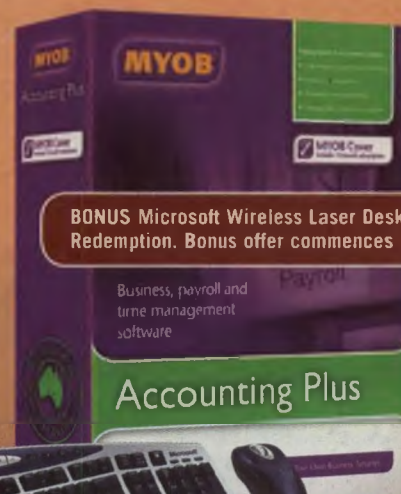


BONUS Microsoft Wireless Optical Desktop 1000 Via Redemption. Bonus offer commences on 13 May 2007.



Upgrade
\$228
MYB0067 / Save \$11

Full
\$282
MYB0061 / Save \$67



BONUS Microsoft Wireless Laser Desktop 4000 Via Redemption. Bonus offer commences on 13 May 2007.



\$724
MYB0063 / Save \$125

BUSINESS

ACCOUNTING

MYOB Premier 10

Powerful multi-user software from Australia's choice and owned MYOB. Issued with a three-user licence and with further licences available, MYOB Premier gives you the power to manage even the most complex business. Get the complete set of business, inventory, payroll and management features as found in MYOB Accounting Plus, plus more! MYOB Premier enables Australian businesses to:

- Handle foreign currency transactions and accounts
- Automate their payroll and bill for time
- Manage multi level pricing on inventory
- Analyze their business with detailed powerful reports and more

MYOB Premier comes with a 12 month subscription to MYOB Cover. A subscription that includes FREE phone, fax and email support, as well as automatic software upgrades and payroll updates to government changes and more...



BONUS Microsoft Wireless Laser Desktop 6000
Via Redemption. Bonus offer commences on 13 May 2007.

MYOB

\$1297

MYB0064 / Save \$198

MYOB RetailManger 9

- Fast customer service
- Advanced Inventory management
- Manages promotions easily
- Includes 12 months of 7 day a week support & updates
- Integrates with MYOB Accounting, Accounting Plus & Premier

MYOB AccountEdge 6

MYOB AccountEdge is Australia's leading choice for businesses with employees working on a Mac.

- Automate your payroll and bill for your time
- Handle foreign currency transactions and accounts
- Control inventory, sales and purchases.

MYOB RetailReady

MYOB RetailReady contains all the software and hardware you need to turn your PC into an effective Point of Sale (POS) solution. RetailReady processes sales fast, reports GST and performs "Cash Ups" in just a few clicks.

- Want to create a professional look for your business
- Are starting a retail business or are tired of using a cash register
- Have your own PC



BONUS Microsoft Wireless Laser Desktop 6000 Via Redemption. Bonus offer commences on 13 May 2007.



BONUS Microsoft Wireless Laser Desktop 4000 Via Redemption. Bonus offer commences on 13 May 2007.



\$1666

MYB0071 / Save \$523

\$525

MYB0065 / Save \$70

\$845

MYB0040 / Save \$154



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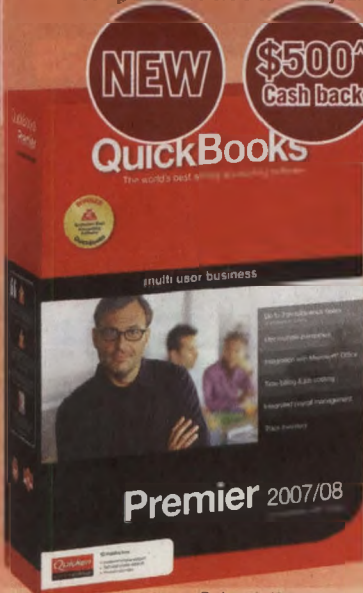


Pick Up Points

29

QuickBooks Premier 2007/08

"The Swiss Army Knife of small business accounting software" (In-the Black, formerly CPA Magazine, Feb 2005). Industry-specific editions incorporate comprehensive tools to meet your specialised needs, with multi-user capability.



- Up to 3 simultaneous users (upgradeable to 5)
- Industry specific editions
- Time billing & job costing
- Integration with Microsoft Office
- Process credit card payments
- Keep track of your business with over 100 reports and graphs
- Integrated payroll management
- Track inventory
- Compatible with Microsoft Windows 2000/XP/Vista™
- 12 months free* technical phone support
- 12 months free* software upgrades

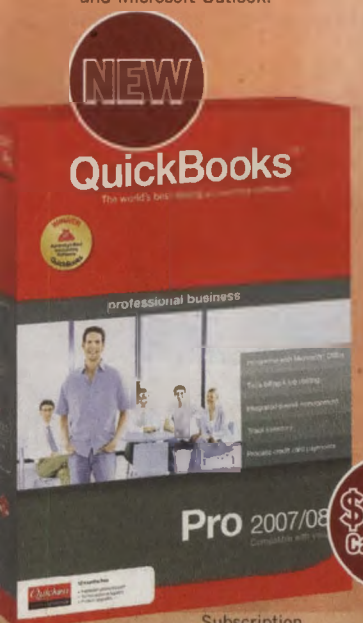
*Promotion begins 14/05/2007
See www.csw.com.au/promotions for terms and conditions



Subscription	Upgrade	Full
\$485	\$730	\$1279
QUI0136 / Save \$44	QUI0133 / Save \$69	QUI0130 / Save \$120

QuickBooks Pro 2007/08

Tracks stock and comes with advanced tools to help increase efficiency and accuracy. Including all the basic accounting functionality of Plus, it adds advanced productivity tools such as integration to the Microsoft Office suite and Microsoft Outlook.



- Time billing & job costing
- Integration with Microsoft Office
- Integrated payroll management
- Track inventory
- Process credit card payments
- Keep track of your business with over 100 reports and graphs
- 12 months free* technical phone support
- 12 months free* software upgrades
- Compatible with Microsoft Windows 2000/XP/Vista™

*Promotion begins 14/05/2007
See www.csw.com.au/promotions for terms and conditions



Subscription	Upgrade	Full
\$298	\$485	\$775
QUI0135 / Save \$31	QUI0132 / Save \$44	QUI0129 / Save \$74

QuickBooks Plus 2007/08

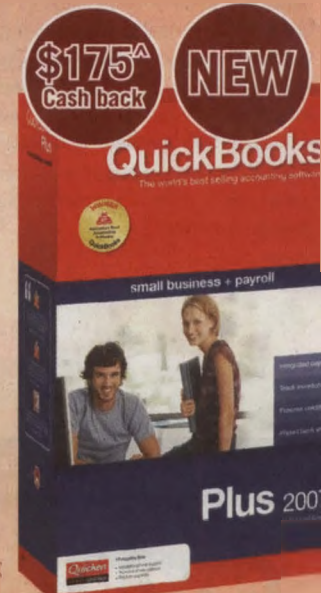
Time saving features and powerful functionality make this a must-have for efficiency-minded businesses. It's designed for businesses that track payroll.

- Integrated payroll management
- Track inventory
- Process credit card payments
- Import bank statements
- Track GST & BAS
- Keep track of your business with over 100 reports and graphs
- Compatible with Microsoft Windows 2000/XP/Vista™
- 12 months free* technical phone support
- 12 months free* software upgrades

*Promotion begins 14/05/2007
See www.csw.com.au/promotions for terms and conditions



Subscription	Upgrade	Full
\$240	\$367	\$531
QUI0134 / Save \$19	QUI0131 / Save \$32	QUI0128 / Save \$48



QuickBooks Accounting 2007/08

- Process credit card payments
- Import bank statements
- Track GST & BAS
- Include your company logo on invoices and email them to clients
- Compatible with Microsoft Windows 2000/XP/Vista™
- 12 months free* technical phone support
- 12 months free* software upgrades

\$274
QUI0127 / Save \$25



QuickBooks EasyStart 2007/08

- Track Sales and Expenses
- Manage GST and BAS
- Reconcile your bank account
- Extensive help menu available from within the software program
- Compatible with Microsoft Windows 2000/XP/Vista™

*Promotion begins 14/05/2007
See www.csw.com.au/promotions for terms and conditions



\$118
QUI0126 / Save \$11



BUSINESS

POINT OF SALE & CRM

Retail Point of Sale 2007/08

Retail Point of Sale is retail intelligence at your fingertips, including the features you need to track all of your sales, inventory, purchase orders, customers and accounting.

- Integrated EFTPOS
- Touch Screen enabled
- Customer management tools
- Inventory management
- Compatible with Microsoft Windows 2000/XP/Vista™
- 12 months free* technical phone support
- 12 months free* software upgrades
- * See pack for details

For the latest promotions that apply to this product please visit www.csw.com.au/promotions



Quicken

\$448

QUI0138 / Save \$51

Retail Starter Kit 2007/08

If you are opening your store for the first time, or upgrading from a cash register, then Quicken's Retail Starter Kit is what you need. The Retail Starter Kit has been designed to make getting started easy.

- Point of sale and back office management
- Includes thermal receipt printer, cash drawer & barcode scanner
- Integrated EFTPOS
- Touch Screen enabled
- Customer management tools
- Inventory management
- Compatible with Microsoft Windows 2000/XP/Vista™
- 12 months free* technical phone support
- 12 months free* software upgrades
- RSK Hardware includes, barcode scanner, thermal receipt printer and a cash drawer
- * See pack for details

For the latest promotions that apply to this product please visit www.csw.com.au/promotions



\$865

QUI0137 / Save \$134

ACT! 9

With more than 2.5 million users, ACT! by Sage is the #1 selling contact and customer manager that helps you make contact, build relationships, and get results. Renowned for its ease of use, ACT! can be tailored by each user and offers robust integration with the tools you use everyday, such as Outlook, Microsoft Office, Lotus Notes, and handheld devices.

Customer Database Instantly access key contact and customer information from one central source, and share it across your organization. Manage up to 50,000 contacts, work with 1-9 users sharing the same database

Stay Organised Stay on top of your deliverables with multiple Calendar views within ACT!. Calls, meetings, and to-do items can be filtered by priority, date range or user, even displaying totals for each type of activity

Record Customer History Create a running history with each contact

Mail Merge correspond with multiple contacts, either via e-mail or paper correspondence, and automatically track a history on each Contact record

E-mail Utilise direct integration with Outlook email while working on ACT!

Track Sales Opportunities from initial inquiry through close utilizing the standard sales process or a process customized to suit your business

Report on Activities Instantly access contacts or detail using advanced Lookups or Keyword Searches



***\$60
Cash back**

*See www.csw.com.au/promotions for full details

Upgrade
\$158

TCA0085 / Save \$11

1 User
\$252

TCA0084 / Save \$27

6 User
\$1325

TCA0087 / Save \$144

ACT! 9 Premium for Workgroups

Make contact. Build relationships. Get results.

Scalable to accommodate larger workgroups or teams*, ACT! Premium for Workgroups delivers all the features and functionality of ACT! while providing your organisation with the centralised administration, advanced contact and user security, advanced opportunity tracking and deployment options required to drive your business.

Manage up to 100,000 contacts

Centralised customer data improves access to information instantly access detailed contact and customer information, manage team calendars and activities, capture all customer communications, track opportunities throughout the sales process, and report on overall team effectiveness

Thorough opportunity tracking provides additional insight

Advanced workgroup functionality boosts team productivity Increase team efficiency with advanced scheduling and calendar functions

Advanced security provides additional data control

Manage security by user, by contact, and by field and assign up to five security levels to allow different access to data and features

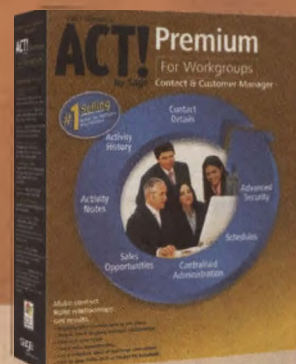
Centralised administration allows

for quick user set-up. Delivers a host of administrative functions designed specifically to meet the needs of larger organisations

Flexible deployment and remote access

options ACT! Premium for workgroups works with act! premium for web for use in a standalone or mixed use environment.

*ACT! Premium for Workgroups EX Edition - for up to 30 users and a database size of 4GB ACT! Premium for Workgroups ST Edition - for 30+ users, more scalability, ability to leverage off a dual server environment. Please call for pricing.



\$428

ACT2150 / Save \$51

ACT!



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Pick Up Points

31

D-Link Xtreme N Gigabit Router (DIR-655)

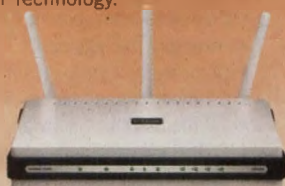
The D-Link Xtreme N Gigabit Router is a draft 802.11n compliant device that delivers up to 300Mbps and superior wireless coverage for larger environments & bandwidth-intensive applications. Backwards compatible with 802.11b/g, connected to a Cable/DSL modem provides high-speed internet access to PC's, gaming consoles and media players. Inc. 4-port Gigabit switch & QoS Prioritisation Technology.

DLK9205 (DLK9205) \$120

DLK9206 (DLK9206) \$120

\$282

DLK0064 / Save \$67



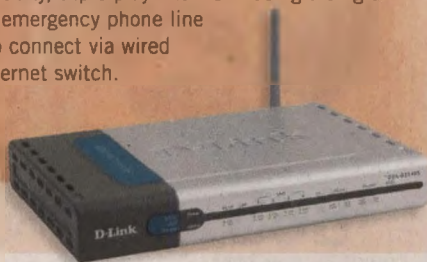
D-Link Adsl 2/2+ Modem/54g VoIP Triple Play Router (DVA-G3340S)

D-link introduces the DVA-G3340S 54G VOIP wireless router with integrated ADSL 2/2+ compliant modem designed for business or home users that want internet connectivity, triple play and VOIP using a single gateway. PSTN lifeline ensures emergency phone line back up service. Users can also connect via wired network with built-in 4-port ethernet switch.

DLK9253 (DVG-G1402S) \$198

\$250

DLK8500 / Save \$49



Imation Nano Flash USB Drive 4GB

The Imation Nano Flash Drive can quickly and easily transfer, share and store almost any digital information, including photos, video and audio clips, web sites and business documents. The easy to use, plug-and-play format enables you to drag and drop files and transfer data on any computer with a USB 1.1 or 2.0 port.

512MB (IMA0036) \$14

1GB (IMA0037) \$18

2GB (IMA0038) \$33

\$63

IMA0039 / Save \$14



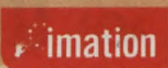
Imation 4x CD-RW Media 10 Pack Compatible, rewritable CD-RW media

Imation 1x - 4x CD-RW media is great solution for your data organization needs. Whether you need it for temporary storage, presentations, backups, downloads or archiving, this highly reliable media features the convenience of rewrite ability, noise-free playback and is highly compatible with all CD-RW drives.

CD-RW 25 pack Spindle (MMM1916) \$22

\$11

MMM1924 / Save \$5



D-Link SECURESPOT Internet Security Device (DSD-150)

D-Link's SECURESPOT Internet Security Device (DSD-150) is a complete all-in-one Internet security solution that provides several key features including network protection, firewall protection, virus protection, spyware protection, identity theft protection, pop-up blocker, SPAM blocker, and parental control - all in a palm-sized box. Significantly reducing pc resources, SECURESPOT comes with 4 licences protecting up to 4 pcs via web-based configuration. Additional licences available.

DLK5109 (DSL-604T) \$120



D-Link

\$189

DLK0058 / Save \$40

Imation 18x External USB DVD Dual Layer DVD Burner

One Drive. All Formats.

The new Imation DVD-RAM External Burner is ideal for storing important personal and business data, from home movies, music, photographs to backups of important files, applications, presentations and reports. Each burner kit comes with a drive, software and instruction manuals to get you started on your digital masterpieces. 1-year warranty

\$136

MMM0562 / Save \$18



Imation DVD-RW 4x Media 5 Pack

Imation DVD-RW discs bring increased functionality to the DVD-R format. With this built-in versatility, you can store a combination of both digital video and digital audio files on the same disc. Flexibility is yours when you choose rewritable media.

DVD+RW 4 x 5 Pack (MMM5653) \$8

DVD-RW 4 x 25 Pack (MMM5732) \$32

DVD+RW 4 x 25 Pack (MMM7183) \$32

\$8

MMM5731 / Save \$3



EDUCATION

STORAGE & CAD SOFTWARE

SanDisk Ultra II

Action Photography. Professional Results.

SanDisk Ultra II cards are unbeatable and best-in-class:

- Write speed (mini) = 9MB/sec/Read speed (mini) = 10MB/sec
- Features high density flash memory and optimized controller technology lets you save large image files faster

Ultra II CF Card 1GB (SIM1002) \$33
 Ultra II SD Card 1GB (SIM5987) \$25
 Ultra II SD Plus 1GB (SAN0027) \$32
 Ultra II Memory Stick Pro Duo 1GB (SAN0065) \$52



SanDisk Titanium U3 2GB

The New look Cruiser Titanium is fast, strong and unbeatable:

- Strong Liquidmetal casing crush resistant over 2,000lbs
- Retractable USB slider eliminates the need for caps
- Lightning speed of 15MB/s read speed & 9MB/s write speed
- U3 smart enables you to take your portable applications on the go
- Preloaded with U3 software: CruiserSync, SignupShield, SKYPE and AVAST

1GB (SAN0068) \$33
 4GB (SAN0086) \$93

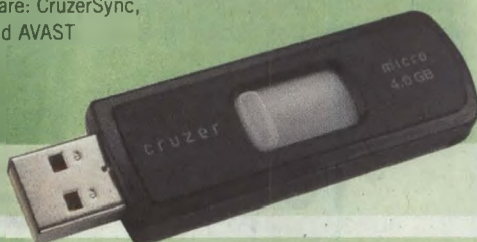


SanDisk Cruzer Micro U3 4GB

SanDisk Cruzer Micro new design is a small, smart and secure USB Flash Drive.

- Small, compact light weight design
- New retractable USB slider eliminates the need for caps
- U3 smart enables you to take your portable applications on the go
- Preloaded with U3 software: CruiserSync, SignupShield, SKYPE and AVAST

512MB (SAN0063) \$18
 1GB (SAN0060) \$22
 2GB (SAN0061) \$38



\$76

SAN0062 / Save \$23

SanDisk

\$54

SAN0069 / Save \$15



AutoCAD 2008 Student - 14 Months^

AutoCAD software is the leading general design application that lets you maximise the value of your design data. It is the foundation for collaborative design and the industry-specific solutions that take your design to the next level.

*License will last for 14 months or the duration of the student's course.

\$154

AUTO173 / Save \$21

Autodesk Inventor 2008 Student - 14 Months^

Autodesk Inventor offers improved workflow functionality and surface-solids modelling tools, increased support for DWF files including password support and print ready format, and key enhancements for large assembly performance. Also includes AutoCAD Mechanical 2008 and Autodesk Mechanical Desktop 2008.

*License will last for 14 months or the duration of the student's course.

\$154

AUTO181 / Save \$21



AutoCAD Revit Architecture Suite 2008 Student - 14 Months^

With the Autodesk Revit parametric building modeller, you don't have to deal with tedious documentation coordination because the software does it for you. Parametric building technology means you can make a change to any part of your building project—plans, schedules, you name it—and it's updated everywhere else. Also includes AutoCAD 2008.

*License will last for 14 months or the duration of the student's course.

\$154

AUTO180 / Save \$21

Autodesk 3DS MAX 9 Student - 2 Years^

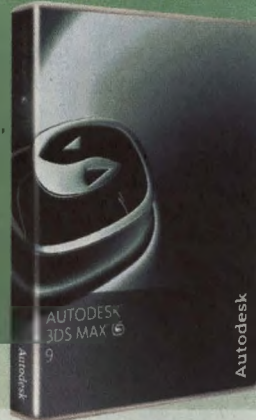
Accelerate your creative workflow and increase your pipeline efficiency. Autodesk 3ds Max 9 3D animation, rendering, and modeling software lets game developers, design visualization professionals, and visual effects artists maximize their productivity and tackle challenging animation projects.

*License will last for 2 years or the duration of the student's course.

\$264

DIS0034 / Save \$11

Autodesk



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Pick Up Points



33

NEW

D-LINK 802.11g Indoor Wireless Access Point (DWL-3200AP)

D-Link unveils its new AirPremier DWL-3200AP 802.11g 108Mbps Managed Access Point, designed specifically for business-class environments such as large or enterprise corporations. Operable as either an AP or Wireless Bridge, and coupled with safety approved metal chassis and advanced security, the DWL-3200AP Managed Access Point allows network administrators to deploy a highly manageable and extremely robust wireless network. With 802.3af PoE Support, this access point also comes with two 5dBi high-gain antennas for optimal wireless coverage.

1 year onsite maintenance contract. (DLM2003) **\$83**

D-Link

\$339

DLK6041 / Save \$90

Lexmark E450DN

Quality Printing Performance

With industry-leading technology that maximises performance, reliability, and environmental efficiency, the new Lexmark E450dn delivers a uniquely superior printing experience to the small and medium workgroup.

Small enough to serve as a personal desktop printer, but robust enough to handle shared workloads of 6 users, the E450dn is flexible to meet your printing needs.

\$915

LEX4501 / Save \$174

Lexmark T644DN

The High Performance Printer for Demands of Business.

Versatile: Specialised and general office printing is consolidated on one printer supporting an array of business output application needs.

Powerful: Standard 128MB RAM, expandable to 640MB, and a 514 MHz processor to handle large print jobs.

\$2697 **LEXMARK**

LEX8646 / Save \$557

2400 dpi Image Quality

NEW



Network-Ready

400 MHz processor & 64 MB



Network-Ready

D-Link web smart 48-Port 10/100 + 2 Combo GbE + (2) 1000BASE-T Ports Switch (DES-1252)

The DES-1252 Web Smart Switch from D-Link is a cost-effective solution for the small and medium business that requires basic management features like VLAN segmentation, QoS prioritization, and secure 802.1x login and authentication, showcased in a low cost, easy to configure, and GUI managed 'smart' business solution.



\$645

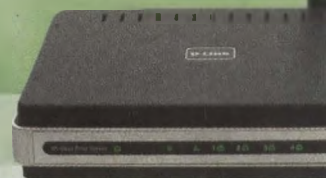
DLK9271 / Save \$154

D-Link Wireless 108G Multifunction Print Server (DPR-1260)

The DPR-1260 Wireless 802.11g 108Mbps Multifunction Print Server is a versatile multi-port print server ideal for office, school and business use. Providing 4 USB Print Server Ports, this device gives users the option of connecting multiple printers and multifunction machines whilst also supporting scanning functionality. In addition, users can connect the DPR-1260 to a Wired Network via Ethernet.

\$187

DLK9211 / Save \$52



Lexmark C534DN

Outstanding colour quality at the right price

When it comes to colour printing, the quality of the image is key. That's why the Lexmark C534DN utilise Lexmark's unique 4800 Colour Quality resolution to produce brilliant business colour every time. Not only can the printer adjust the dot size to deliver the perfect image, but it can also adjust the dot shape. When combined with Lexmark's new spherical toners you are ensured of crisp, high quality output at up to 21 ppm colour and 22 ppm mono.

\$1564

LEX5340 / Save \$298

saving up to 50% of printing costs



Network-Ready

Lexmark X642E

Easy-to-use, Integrated Multifunction Printer - In Touch with business needs

Easy-to-Use: Lexmark e-Task 5.7-inch (15.5 cm) monochrome touch screen provides access to print, copy, fax and scan-to-email functions.

Versatile: Specialised and general office copy, fax, scan and print is consolidated on one multifunction printer supporting an array of business output application needs.

Scanning: Up to legal size documents (8.5 x 14", 216 x 355 mm) with up to 600x600 dpi in black and up to 300x300 dpi in color with an up to 50 Automatic Document Feeder (ADF)

\$2375

LEX2601 / Save \$453



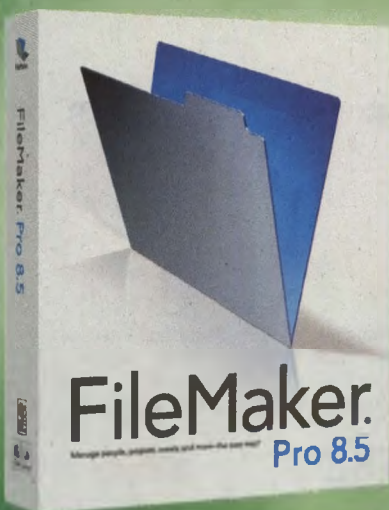
Network-Ready

Print / Copy / Fax / Scan

FileMaker. Manage people, projects, assets and more—the easy way!

NEW! Annual Site License - for schools

Introducing an innovative Annual K-12 School Site License which covers every computer in your school for every FileMaker product including FileMaker Pro, FileMaker Pro Advanced, FileMaker Server, FileMaker Server Advanced and FileMaker Mobile. The costs are per staff member per year and is calculated according to the number of full-time teachers, administrators and support personnel at your school. It is available for schools with a minimum order of 20 licenses. The license also includes all upgrades during the 12-month period and enables staff to use the software at home. Students can be added for just \$5 (inc. GST) each per year.



Classic LicenSe -- for individuals

Schools can purchase for individual teachers and administrators an affordable flat-fee paper license of FileMaker Pro. The license is owned by the school, but does not include upgrades. There is no minimum order, so you can purchase just one or as many copies as you need.

Call our Licensing experts today on 1300 761 761 to obtain a quote or make further enquiries on Filemaker Licensing for Educational Institutions.

Imation Flash Media Cards

Imation now offers a range of Digital Memory Cards. Flash memory is used in many mobile phones, PDAs, video cameras, electronic devices and is the new media that is helping to pave the way for tomorrow's fully networked society. Digital Memory Cards are now available in capacities ranging from 256MB to 1GB.

Compact Flash (CF)

256MB (MMM2322) \$23
512MB (MMM2333) \$29
1GB (MMM2344) \$36



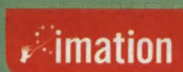
Secure Digital Cards (SD) (with adapter)

256MB (MMM2377) \$19
512MB (MMM2388) \$27
1GB (MMM2555) \$32



Multimedia Memory Cards (MMC)

512MB (MMM0404) \$27
1GB (MMM0403) \$43



Mini Secure Digital Cards (Mini SD) (with adapter)

256MB (IMA0036) \$19
512MB (MMM0407) \$28



Imation Nano Flash Drives 4GB

The Imation Nano Flash Drive can quickly and easily transfer, share and store almost any digital information, including photos, video and audio clips, web sites and business documents. The easy to use, plug-and-play format enables you to drag and drop files and transfer data on any computer with a USB 1.1 or 2.0 port.

512MB (IMA0036) \$14
1GB (IMA0037) \$18
2GB (IMA0038) \$33

\$63

IMA0039 / Save \$14



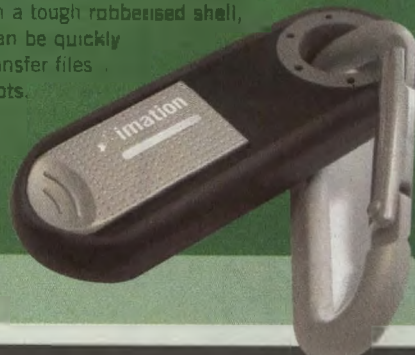
Imation Clip Flash Drive 2GB

For the ultimate in portable data storage, the Imation Clip Flash Drive is the easy answer. Safely encased in a tough rubberised shell, this extremely compact flash drive can be quickly removed from its case to share or transfer files while fitting into the tightest USB slots.

256MB (MMM7494) \$25
512MB (MMM7496) \$28
1GB (MMM7497) \$34

\$56

MMM7498 / Save \$17



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Pick Up Points



Adobe Creative Suite 3: Student Editions

Pursue your wildest ideas. Communicate any way you want, and build valuable careers skills. New integrated versions of Adobe Creative Suite 3 - available at low student prices - include the tools you need for print, web, video, film, and media-rich interactive projects.

Eligible Individuals:

Only full or part-time students enrolled at Higher Education establishments defined as accredited public or private university or college that grants degrees requiring not less than the equivalent of two (2) years study OR students enrolled at an accredited public or private school providing full-time instruction. The following Adobe products are available as Student Editions. When purchasing, students will be asked to apply for a serial number and proof of identity is required.



**Design Premium
Student Edition**
MAC (ADS0006)
WIN (ADS0007)

\$420



**Design Standard
Student Edition**
MAC (ADS0008)
WIN (ADS0009)

\$280



**Master Collection
Student Edition**
MAC (ADS0010)
WIN (ADS0011)

\$699



**Production Premium
Student Edition**
MAC (ADS0012)
WIN (ADS0013)

\$422



**Web Standard
Student Edition**
MAC (ADS0014)
WIN (ADS0015)

\$282



**Photoshop Extended
Student Edition**
MAC (ADS0016)
WIN (ADS0017)

\$216

Netgear SSL312 ProSafe VPN Concentrator 25

Now remote employees can securely access the corporate network with a PC using standard browsers. The NETGEAR ProSafe SSL VPN Concentrator 25 provides flexible anywhere access and seamlessly integrates with existing firewall infrastructure to ensure privacy of data.



\$597

NTG7360 / Save \$152

NETGEAR

Netgear WG302 ProSafe Wireless Access Point 802.11g

Intelligent Networking Features for a Scalable, Secure Solution NETGEAR's ProSafe 802.11g Wireless Access Point WG302 delivers the secure, reliable, high performance wireless local area networks (WLANs) today's mobile workforce demands. This powerful device provides the ultimate in industry standard access to corporate network resources, email and the Internet.

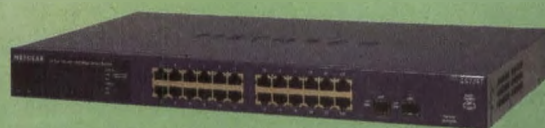


\$344

NTG7138 / Save \$85

Netgear GS724T 24-port Gigabit Smart Switch

NETGEAR's GS724T Gigabit Smart Switch delivers non-blocking gigabit power plus a web browser interface for simple switch management. Easily configure ports, trunks, VLANs, and prioritization and enjoy the benefits of management without the cost and complexity of a fully SNMP-capable network. Two SFP GBIC slots provide optional fiber connectivity.



\$686

NTG7158 / Save \$183

Netgear ProSafe 24 Port 10/100 Stackable Smart Switch with 4 Gigabit Ports

Stack up to six units and manage them all from a single IP address. Expand your network as you grow your business, adding switches to the stack as you need them. Use PoE ports to simplify the installation and management of wireless access points, VoIP phones, and security cameras. All ProSafe Stackable Smart Switches are made to last, with 5-year warranty and available Premium Support Packs. Redundant stacking features deliver maximum availability.



\$544

NTG7651 / Save \$145

ACCESSORIES

Cellnet Simflash Express

Sim & Flash card reader / writer

- Dedicated transflash/micro SD slot (no adaptor required)
- Sim card slot and Sim manager software included
- Fits all popular flash memory cards
- 3G compliant

Memory card support:

- Mini SD card
- Micro SD (T-Flash)
- Secure Digital card
- MultiMedia Card
- MMC Micro
- SIM Card
- MultiMedia Card Plus (MMC)
- RS-MMC4.0 (MMC Mobile 4.0)
- MS/MS DUO/MS Pro DUO



\$25

CEL0012 / Save \$5

Cellnet 'Pico' Bluetooth Headset

- Super Small Bluetooth headset, has incredible clarity, durability and quality, it is ultra compact
- Up to 5 hrs talk time
- 200 hrs standby
- Supports voice dialling and last number redialing
- Superior voice quality
- Bluetooth v 1.2 (compliant with v 1.1 and 2.0)
- Headset and handsfree profile supported
- Only weighs 9grams (with earhook)
- High performance rechargeable lithium battery



\$46

CEL0013 / Save \$43

Cellnet Pilot-id Bluetooth Portable Carkit

- Fully Portable from car to car or office
- Displays caller's telephone number
- Announces caller's telephone number
- Built in noise cancelling microphone
- Separate answer/hang up button
- 20 call memory
- Supports voice dialling
- Microphone mute on/off
- Call transfer
- Digital signal processor (DSP)
- Bluetooth v 1.2



\$96

PILO001 / Save \$33

Golla Laptop Bags

Suitable for laptops with 15inch screens and will also hold all stationary including mobile phone holder

- Double stitching and heavy padding to keep your laptop safe
- Designed for everyday use, ultra light structure
- Golla Laptop Bag (style dance) is Off White colour
- Golla Laptop Bag (style swing) is Dark Gray colour



Golla Dance Bag

Golla Swing Bag

\$68

\$68

CEL0014 / Save \$11

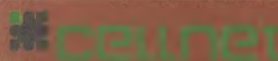
CEL0015 / Save \$11

Cellnet Digital Photoframe

Fashionable and Slim Design, Digital Slideshow Auto Function, Picture Rotation, 90, 180 and 270 degrees, Zoom in, Zoom out function
Plays JPG, MP3, WMA, MPG1, MPG2 and MPG4 files, Multi Language Support

Specifications:

Screen Size: 7" TFT-LCD
Resolution: 480x234 (RGB)
Brightness: 300CD/m
Contrast: 150:1
View Angle: Horizontal 90 degrees
Vertical: 80 degrees
Photo Format: JPG
Memory Card: MS, SD, and MMC
Dimensions: 265x50x200mm
7" Digital Photo Frame



\$138

CEL0016 / Save \$41

Golla Bag - Mobile Cap

Slip your phone into one of these fun colourful mobile caps, which include a lanyard for your convenience Comes in 3 funky colours



Lime Green

Pink

Black

\$12

\$12

\$12

CEL0017 / Save \$3

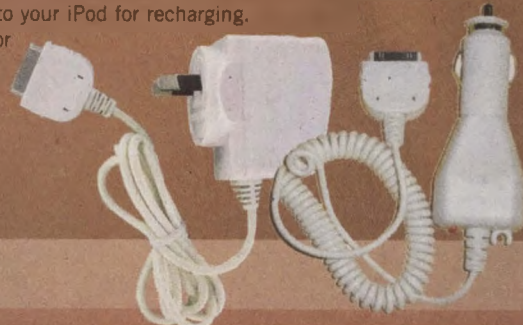
CEL0019 / Save \$3

CEL0018 / Save \$3

Cellnet i-Pod Nano and Video Power Twin Pack

Use this compact, convenient twin pack to charge your iPod at home and on the road. Simply plug the adapter into a wall or cigarette lighter outlet then connect to your iPod for recharging.

This kit is suitable for iPod Nano and iPod Video



\$36

CEL0020 / Save \$4



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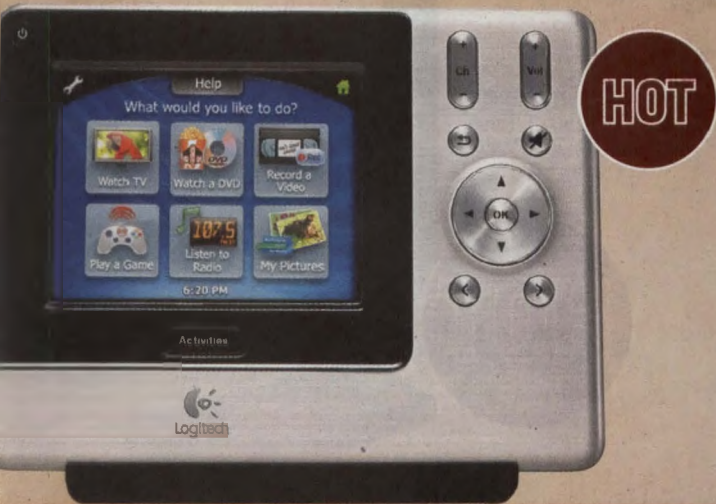


Pick Up Points

37

Logitech Harmony 1000i Advanced Universal Remote

The latest and most intelligent evolution of simple, one-touch control. Say goodbye forever to the wasted time and endless frustration of multiple remotes controlling multiple devices. With patented Smart State Technology, one touch is all it takes to effortlessly control up to 15 separate components. Back-lit buttons, full-colour touch screen, rechargeable in stand, and easy computer-based set up via world's largest on-line database. Premium control of your entertainment system. USB. PC/MAC. 1-year warranty.



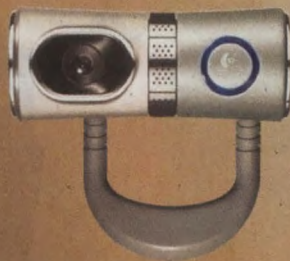
\$486

LOG3601 / Save \$214



Logitech QuickCam Ultra Vision

Enjoy a video calling experience of being there like never before. QuickCam Ultra Vision's extra large, precision-engineered glass lens and RightLight 2 Technology provide up to twice the image clarity of other cameras. Conversations are crisp, clear and echo-free with the integrated microphone and RightSound Technology. 2-year warranty.



\$182

LOG3576 / Save \$68



Logitech Premium Stereo Headset

Delivers great audio quality for the PC, stereo system and mp3 player; connects with universal 3.5 mm jack. 1-year warranty.



\$24

LOG3553 / Save \$16



Logitech Harmony 785

Finally, complete control with one remote. It's like having 15 remote controls in one. Control your entire home entertainment system with the touch of one button. Just choose "Watch a DVD" and the Harmony turns on your TV, DVD, Stereo receiver- even presses play. Logitech's online database includes 3,500+ brands, 125,000+ devices and growing daily so you're always in control. 2-year warranty.

\$276

LOG3596 / Save \$124



Logitech Harmony 525

Control your Home Entertainment system at the touch of only one button. Easy to use with its activities (Watch Cable, Watch a DVD, Play a videogame...), it is also very easy to set up. With instant access to an internet-based worldwide database of infra-red codes, you can control all devices from all manufacturers. 2-year warranty.

\$126

LOG3594 / Save \$64



Logitech QuickCam Pro 5000

Designed to provide a more personal communication experience, the Logitech QuickCam Pro 5000's exclusive technologies ensure sharp video and clear audio. Logitech RightLight technology provides optimum video even in dim lighting while RightSound(TM) technology eliminates annoying echo and allows natural conversations. 2-year warranty.

\$111

LOG3621 / Save \$39



Logitech Premium Notebook Headset

Comfortable and adjustable, behind-the-head design. When not in use, it folds for storage into a protective travel case. In line volume control, analog-USB adaptor & noise cancelling mic: perfect for PC calling, gaming & music. 1 year warranty



\$73

LOG3573 / Save \$29



MULTIMEDIA

Logitech MX-3200 Cordless Desktop

Windows Vista-ready controls include dynamic search and zoom. Easily manage your Internet calls with the communication console and comfortably listen to music with dedicated media controls. Precision laser mouse with USB connection. 5-year warranty



\$139

LOG3587 / Save \$61

Logitech diNovo Media Desktop Bluetooth Laser

The diNovo Media Desktop is the most advanced desktop for today's digital world. Its award-winning ultra-flat keyboard maximises comfort and quietness, while a matching MediaPad, with integrated calculator, provides remote control playback of music or images on your PC. Rechargeable laser mouse. Bluetooth connectivity turns your PC into wireless Bluetooth hub - share data b/w other Bluetooth devices. 3-year warranty.



\$267

LOG3535 / Save \$83

Logitech diNovo Edge

The world's most advanced keyboard, the ultra-slim diNovo Edge delivers ultimate feel and response with the PerfectStroke key system that eliminates slippage and makes every keystroke precise and fluid. Advanced Li-ion batteries charge faster and last longer in combination with a slim charging base that doubles as a stand. Revolutionary touch-disc, backlit stealth controls, volume slider and Fn keys provide the premium experience. Bluetooth wireless USB. 3-year warranty.



\$262

LOG3605 / Save \$88

Logitech Alto Notebook Stand

This adjustable portable stand places your notebook display at comfortable eye level while the full-sized keyboard lets you type faster and with less fatigue. Easy to set up and easy to store, it works with virtually any notebook. Adjustable for optimal comfort. 5-year warranty.



\$141

LOG3610 / Save \$39

Logitech Laser Cordless Mouse MX-Revolution

The world's most advanced mouse, MX Revolution streamlines the way you work with hyper-fast scrolling, instant application switching, touch- to-search, and high-resolution zoom. Rechargeable Li-ion battery, full-speed USB wireless, and advanced laser tracking deliver precision control and complete convenience. 3-year warranty. USB PC/Mac.



\$129

LOG3583 / Save \$51

Logitech Laser Cordless Mouse VX Revolution

The ultimate notebook mouse, VX Revolution turbocharges your digital experience with a nearly frictionless alloy scroll wheel that lets you fly through long documents at hyper-speed. Perform instant web queries with the convenient search button, and effortlessly zoom in and out. Storable receiver 3-year warranty. USB. PC/Mac.



\$92

LOG3582 / Save \$38

Logitech 2.4GHz Cordless Presenter

Take advantage of its 50-foot range to control your presentations while moving around an auditorium with confidence. A built-in LCD timer with vibration alerts helps you effectively manage your time. Storable receiver, carry case and On/Off button for complete portable control. USB plug & play. 3-year warranty.



\$75

LOG3495 / Save \$55



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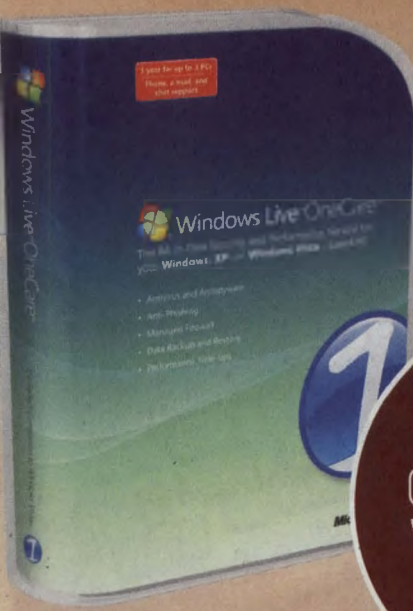


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Pick Up Points

39



Microsoft Live OneCare
The All in One Security and Performance Service for your Windows XP or Windows Vista-based PC

Windows Live OneCare helps protect your computer, and its automated optimisation features keep your PC running at its speediest. OneCare even regularly backs up your important files. You get all this in one convenient package.

40%*
OFF RRP

Windows Live OneCare

1st May to 31st July

Via cash back redemption from Microsoft.

Terms and conditions apply, see csw.com.au/promotions for full details

After cashback

\$36*

MSA6100 / Save \$24

Microsoft Windows Vista Home Premium Upgrade

For the best home computing and entertainment.

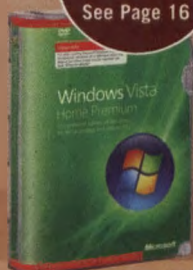
The preferred edition of Windows Vista for home desktop and mobile PCs.

Home Premium Full (MSA5103) \$405

Home Premium Academic Upg (MSA5105) \$161

\$269

MSA5104 / Save \$30



***BONUS GIFT**

See Page 16

Microsoft Office Home & Student 2007*

Create great looking documents quickly and organise information easily.

The essential software suite for home computer users that makes it easier and more enjoyable for you to get things done with confidence.

\$217

MSA6101 / Save \$32



***BONUS GIFT**

See Page 16

#Non Commercial only

Microsoft Office Professional 2007 Academic*

Work efficiently with powerful productivity, contact management and database software.

Microsoft Office Professional 2007 is a complete suite of productivity and database software that will help you save time, stay organised and effectively manage information.

\$247

MSA6107 / Save \$52



*Non Commercial only

Microsoft LifeCam VX-6000

Experience instant messaging in a whole new way communicate with friends and family as if they were in the room with you. Superior Video Quality - See the smiles clearly with 640 x 480 pixel video resolution. High Definition Video and Photos - High Definition video and photos show you in the best light. Superior Video Calling - See the smiles clearly with up to 1.3MP Video Calling.

After cashback

\$77*

MST8425 / Save \$42

*Via redemption See csw.com.au/promotions for full details



\$30*
Cash back

Microsoft Wireless Desktop 1000

Microsoft Wireless Optical Desktop 1000 offers a complete desktop solution. You get the features that make life easier, like wireless freedom, precision optical performance, and one-touch Hot Keys. All that, plus the reliability you expect from Microsoft, makes Wireless Optical Desktop 1000 one very good deal.



\$59

MST8356 / Save \$20

Microsoft Wireless Notebook Optical Mouse 4000

Plug in the compact receiver when you're ready to work, then snap it into your mouse when you travel, saving hassle and battery life. Easily enlarge and edit details with the new Magnifier and scroll four ways with the innovative 4-Way Scrolling.



Microsoft \$48

MST8407 / Save \$11



\$30*
Cash back

Microsoft Wireless Notebook Presenter Mouse 8000

Do more and carry less with the first ever Notebook Mouse with integrated slide presenter, laser pointer, and media remote control. It's an all-in-one super tool for the office, road, and home the only input device you need.



After cashback

\$83*

MST8434 / Save \$36

*Via redemption See csw.com.au/promotions for full details

HOME PROTECTION & STORAGE

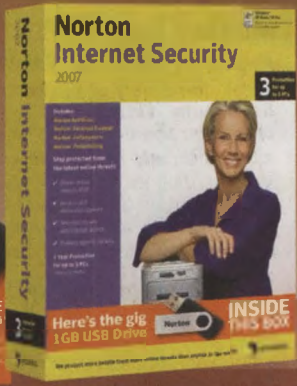
Norton Internet Security 2007

Stay protected from the latest online threats when connecting to the Web. Norton Internet Security 2007 is always running in the background to detect and block spyware, viruses, worms, phishing Web sites, and hackers before they can cause harm.

3
USER

\$88

1GB USB Drive INSIDE specially marked boxes

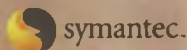


SYM9905 / Save \$11

Norton Save and Restore 2.0

Windows Vista Ready! Backups are important, but they can be a hassle. Norton Save & Restore 2.0 safeguards your digital treasures by automatically backing up everything on your computer, or only the files and folders you select. It can even find and save all files of a certain type (such as pictures or documents) no matter where they are located. And if the unexpected happens, Norton Save & Restore recovers your files automatically.

\$61



SYM9901 / Save \$9



SanDisk Cruzer Micro U3 4GB

SanDisk Cruzer Micro new design is a small, smart and secure USB Flash Drive.

- Small, compact light weight design
- New retractable USB slider eliminates the need for caps
- U3 smart enables you to take your portable applications on the go
- Preloaded with U3 software: CruzerSync, SignupShield, SKYPE and AVAST

512MB (SAN0063) \$18

1GB (SAN0060) \$22

2GB (SAN0061) \$38



\$76

SAN0062 / Save \$23

SanDisk Standard Secure Digital (SD) 2GB

Optimal Speed. High Quality

The SD Card is a highly secure stamp-sized flash memory card. The SD Card can be used in a variety of digital products; digital music players, cellular phones, handheld PCs (HPCs), digital cameras, digital video camcorders, smart phones, car navigation systems and electronic books.



\$34

SAN0030 / Save \$10

SanDisk microSD Secure Digital Card (SD) 2GB

- Built-in security features enable users to download, store, and play secure content
- The microSD / Transflash cards are universally compatible
- Comes bundled with an SD adapter, providing universal compatibility with other devices using a full-size SD memory card slot



\$47

SAN0077 / Save \$21

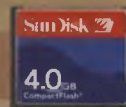
SanDisk Standard Compact Flash Card (CF) 4GB

- High transfer rate for fast copying and downloading
- Built to last, with an operating shock rating of 2,000Gs, equivalent to a ten-foot drop**
- 5-year limited warranty

Standard Compact Flash (CF) 512MB (SIM0190) \$23

Standard Compact Flash (CF) 1GB (SIM0191) \$28

Standard Compact Flash (CF) 2GB (SIM0690) \$48



\$84

SAN0036 / Save \$6

Norton 360

Norton 360 delivers all-in-one security for everything computer users care about, providing automatic protection from fraudulent Web sites, identity theft, viruses, spyware, and other online threats. It also helps keep your PCs tuned for peak performance and protects important files by allowing you to back them up automatically and restore them at any time.

- PC Security
- Transactional Security
- Back up and Restore
- PC Tune up



1GB USB Drive INSIDE specially marked boxes*

Available inside specially marked boxes of Norton 360 and Norton Internet Security*. While stocks last.

\$118

SYM9904 / Save \$12



SanDisk Sansa c240 MP3 Player 1GB

The new Sansa c200 Series MP3 players are the latest in SanDisk's audio line. Created by the leaders in flash memory, this flash-based player provides everything you need to play music, enjoy photos, and FM radio – in vibrant color! This affordable, compact color-screen MP3 player has an amazingly easy-to-use interface. It supports Microsoft PlaysForSure subscription music and is available in 1GB and 2GB capacities.



\$106

SAN0084 / Save \$23

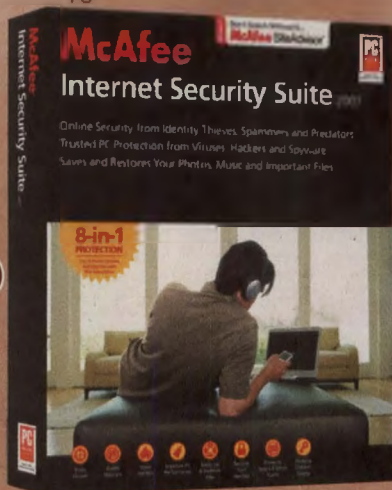
McAfee Internet Security Suite Enjoy a Worry Free Online Experience

With the increase in viruses, spyware, hackers, e-mail scams, online predators and other online attacks, it's more important than ever to protect you and your family. You need an easy way to protect your PC, files, identity, and online experience.

McAfee Internet Security Suite is the protection you need to keep you and your family safe when surfing the Web, shopping, banking, playing games and enjoying other online activities. McAfee Internet Security Suite also allows you to back up your files, and restore lost or corrupted data. Get the confidence you need knowing McAfee shields your PC around the clock.

8-in-1 Protection

McAfee Internet Security Suite is 8-in-1 protection for your PC, important files, identity and online experience. Relax knowing that you always have the latest protection updates, software upgrades and enhancements automatically delivered to you.



8 in 1 Protection

Backup and Restore

McAfee

Upgrade

\$49

MCF2147 / Save \$10

1 User

\$80

MCF2144 / Save \$20

3 User

\$105

MCF2146 / Save \$24

McAfee PC Protection Plus VirusScan Plus, Backup & Restore Protect Your PC and Life Memories

With photos, music, videos and valuable documents stored on your PC, it's more important than ever to protect yourself from viruses, spyware and hackers. You also need an easy way to back up and restore your important files. McAfee PC Protection Plus provides essential protection while surfing the Web and downloading files.

It also makes it easier than ever to back up and restore photos, music, videos and other important information.

5-in-1 Protection

McAfee PC Protection Plus is 5-in-1 protection for your PC and important files. Relax knowing that you always have the latest protection updates, software upgrades and enhancements automatically delivered to you.



5 in 1 Protection

Backup and Restore

Upgrade

\$33

MCF2143 / Save \$7

1 User

\$57

MCF2141 / Save \$12

3 User

\$88

MCF2142 / Save \$22

McAfee Total Protection

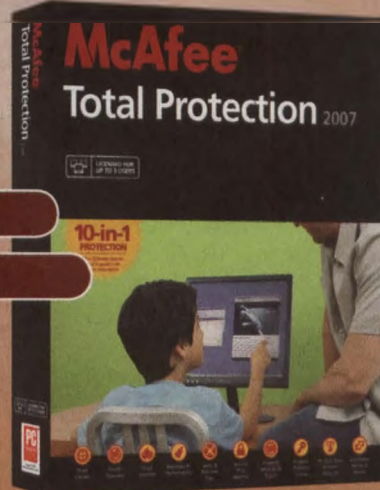
Peace of Mind for Your Entire Family

Today, the variety of threats to your PC, files and online identity is bewildering. Viruses, spyware, hackers, spam and email scams, online predators, identity thieves and wireless network intruders all pose threats to the safety of you and your family.

McAfee Total Protection is the final word in PC security. It provides comprehensive and complete security when you're online, no matter whether you're wired or wireless, surfing the Web or playing games, using e-mail, shopping or banking.

Most Complete Security 10-in-1 Protection

McAfee Total Protection offers the most complete protection and peace of mind for your entire family. Relax knowing that you always have the latest protection updates, software upgrades and enhancements automatically delivered to you.



VirusScan Plus

Backup and Restore

Upgrade

\$64

MCF2152 / Save \$16

1 User

\$103

MCF2150 / Save \$26

3 User

\$128

MCF2151 / Save \$31

McAfee VirusScan Plus

AntiVirus, Firewall & AntiSpyware

Essential PC Protection With the wide variety of viruses, hackers and blended threats lurking on the Internet today, you need more than a simple anti-virus program to keep your PC and files secure.

McAfee VirusScan Plus AntiVirus, Firewall & AntiSpyware is the essential combination of protection to combat and defeat even the most sophisticated attacks. Surf the Web and download files safely knowing McAfee shields your computer around the clock. 3-in-1 Protection

McAfee VirusScan Plus is 3-in-1 protection from viruses, hackers and spyware that you can trust. Relax knowing that you always have the latest protection updates, software upgrades and enhancements delivered to you automatically. With McAfee you always have the most up-to-date protection. friends and family.



3 in 1 Protection

AntiVirus / Firewall / AntiSpyware

Upgrade

\$30

MCF2139 / Save \$6

1 User

\$49

MCF2137 / Save \$10

3 User

\$81

MCF2138 / Save \$19

NETWORKING & FINANCE

D-Link RangeBooster N ADSL2+ Modem Router (DSL-2740B)

D-Link DSL-2740B ADSL 2/2+ Modem and draft 802.11n Wireless Router optimizes download speeds up to 24Mbps and High-Speed Wireless Connectivity up to 300Mbps when used with RangeBooster Cards. Backward compatible with 802.11b/g this product also includes Firewall Protection, User-Access Control, WPA/WPA2 Wireless Security and QoS Priority Control for smooth VoIP traffic and/or media streaming. Get exceptional coverage with this multifunction router.

PCI Card (DLK9205) \$120

PCMCIA Card (DLK9206) \$120



\$334

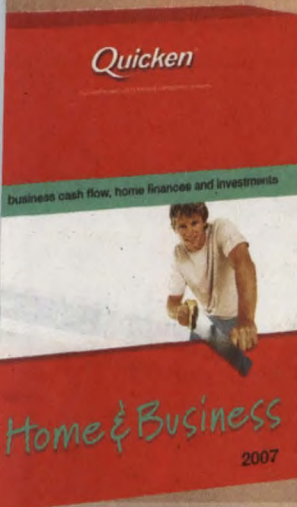
DLK0065 / Save \$65

D-Link

Quicken Home & Business 2007

Business cash flow, home finances & investments

- Track all of your personal and business bank accounts, credit cards, income and expenses
- Monitor all of your personal and business investments
- Create BAS and other business Tax reports
- Create Estimates and Invoices
- Use the new ASIC FIDO superannuation calculator



Quicken

Upgrade
\$177

QUI0123 / Save \$22

Full
\$390

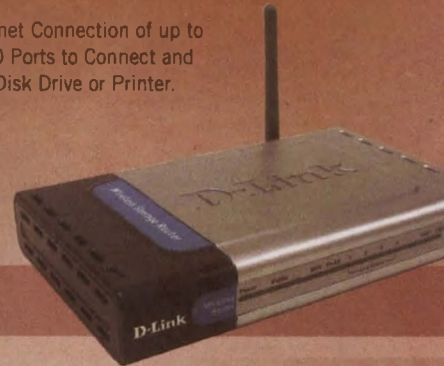
QUI0122 / Save \$39

D-Link 108Mbps Wireless Storage Router (DI-624S)

Wirelessly share a Broadband Internet Connection of up to 108Mbps. Also features 2 USB 2.0 Ports to Connect and Share either a USB External Hard Disk Drive or Printer. 802.11b, 802.11g Compatible.

PCI CARD (DLK5400) \$64

PCMCIA CARD (DLK5401) \$63



\$160

DLK9989 / Save \$39

D-Link GigaExpress Gigabit Switch (DGS-1005D)

Get the blazing speed of Gigabit Ethernet with the D-Link GigaExpress DGS-1005D, a 5-port 10/100/1000Mbps Gigabit Switch that delivers power, performance, and reliability in one cost-effective, space-saving design.

GIGABIT PCI CARD (DGE-530T) \$27



\$65

DLK0666 / Save \$24

Quicken Personal Plus 2007

Easy home finance & investment organiser

Provides tools to help you manage your finances, prepare for tax time and plan for the future, plus exclusive tools to help you optimise your investment portfolio and maximise tax-saving opportunities.

- Track all of your personal and business bank accounts, credit cards, income and expenses
- Monitor all of your personal and business investments
- Budgeting tools to help you save and plan for your future
- Use the new ASIC FIDO superannuation calculator



TOP BUY PC USER
Best Accounting Software

\$157

QUI0131 / Save \$22



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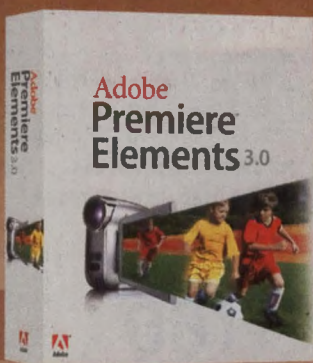
43

Adobe Premiere Elements 3.0

Adobe Premiere Elements 3.0 software makes creating and sharing impressive home videos a snap. Burn your footage to DVD in two simple steps, complete with a DVD menu and scene index, or easily assemble your movie by rearranging clips with drag-and-drop simplicity. And share your movies on DVD, the web, mobile phones, and virtually anywhere else.

\$147

ALD9585 / Save \$22

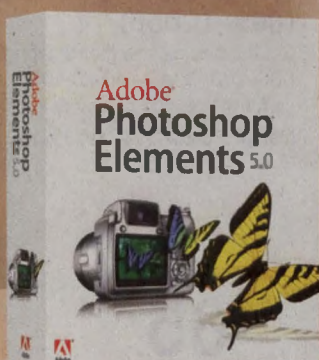


Adobe Photoshop Elements 5.0

Adobe Photoshop Elements 5.0 software combines power and simplicity so you can do more with your photos. Instantly fix flaws or adjust color and lighting with new advanced controls. Quickly drop your photos into customisable layouts and show off your creativity with dynamic web photo galleries created using Flash technology. And view all your photos and video clips in one convenient place.

\$146

ALD9589 / Save \$23



Adobe Photoshop Elements 5.0 plus Adobe Premiere Elements 3.0

Complete photo and video editing made easy

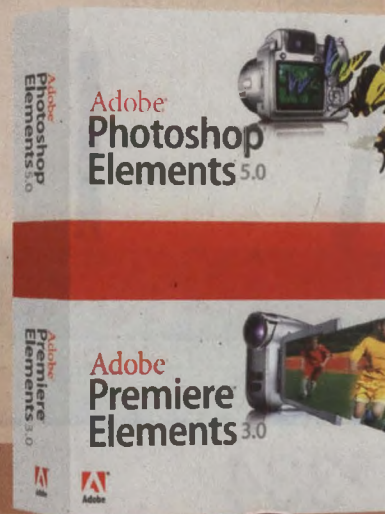
Adobe Photoshop Elements 5.0 plus Adobe Premiere Elements 3.0 software combines two powerful yet easy-to-use products to deliver the most complete photo and video editing solution. Entertain friends with unique cinematic slide shows and dramatic freeze-frame effects, create personalized DVDs, and share on the web.

- Combine photos and videos in entertaining new ways
- Bring out the best in your photos
- Bring your home videos to life



\$224

ALD9597 / Save \$25



Fuji Xerox Printers DocuPrint C525 A A4 Colour Laser Printer

- Black Print Speed 25ppm
- Colour Print Speed 5ppm
- First Page Out 9 Sec Black/ 17 Sec Colour
- Max Duty Cycle 45,000 ppm
- Memory Size 64MB
- Resolution 9600 x 600 image enhancement
- Paper capacity 250 sheets Std / 950 Max



\$100*

Fuji Xerox Printers WorkCentre PE220 Black & White Multifunction Printer

The WorkCentre PE220 is big in performance and small in size making it suitable for small businesses and workgroups, branch offices and individual users. Clean, efficient laser printing Razor sharp copying Great colour and monochrome scanning.



\$100*

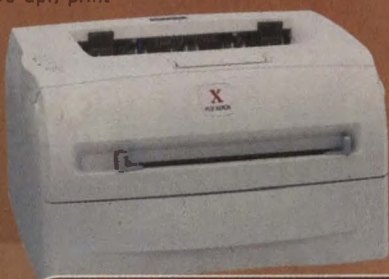
\$412

FXP0525 / Save \$171

*See csw.com.au/promotions for full details

Fuji Xerox Printers DocuPrint 204A A4 Mono Laser Printer

- Resolution: HQ1200 (2400 x 600 dpi) print resolution
- Print Speed 20ppm
- First page out time less than 10secs
- Connectivity: USB 2.0 Full Speed, IEEE 1284 Parallel
- Memory Size of 8MB



Fuji Xerox Printers

\$168

FXP0204 / Save \$161

Ideal for personal use!

\$429

FXP1220 / Save \$70

Print / Copy Fax / Scan

Fuji Xerox Printers WorkCentre 3119 A4 Mono Multifunction Printer

- A4 Mono Laser Printer, Copier and Colour Scanner
- 600x600dpi printing and copying Up to 10,000pages/month
- Scan and Edit Scan to Desktop
- Bundled with Software Nuance
- PaperPort SE 10.0
- 19 ppm/ cpm



\$237

FXP0235 / Save \$38

PRODUCTIVITY & ORGANISATION

Fire Up Your Productivity 2 Hot Products, 1 Hot Price!

Dragon Naturally Speaking 9 Standard and PDF Converter Professional 4



Nuance have combined their two best-selling software titles into one special package, so you can boost your productivity this summer.

So What's The Offer?

Get PDF Converter Professional 4 and Dragon NaturallySpeaking 9 Standard - for one low price. Together, these products usually retail at almost \$400, so if you've ever wanted to work smarter, faster and more efficiently, now's the time! Dragon NaturallySpeaking Standard 9 lets you accurately create documents - just by speaking! Simply install it and you'll be dictating letters, e-mail and instant messages in less than one third the time it takes to type them. With special support for Australian accents, the product sold individually has an RRP of \$199.95. PDF Converter Professional 4 is everything you need to create, convert and edit PDF files all within a single, affordable application. This product sold individually has an RRP of \$195.

Hurry! While stocks last.

\$220

NUA0038 / Save \$174

\$30*
Cash back



Dragon Naturally Speaking 9 Standard Edition

With Dragon Naturally Speaking Standard, you can talk to your computer and watch your spoken words instantly appear in documents, emails and instant messages. Fast, easy and amazingly accurate. No script reading required to get started!

\$165

NUA0019 / Save \$35

\$30*
Cash back



Dragon Naturally Speaking 9 Preferred Edition

Gives small business and advanced PC users the power to create documents, reports, emails and more - all by speaking! Fast, easy and amazingly accurate, it's over three times faster than typing. No script reading required to get started! Just use your voice to dictate and edit in all Windows-based applications.

\$330

NUA0017 / Save \$70

\$30*
Cash back



Nuance PDF Converter 4 Professional

ScanSoft PDF Converter Professional 4 gives you everything you need to create, convert, view and edit PDF files. Powerful analysis and intuitive editing tools allow you to quickly turn paper and PDF files into editable electronic documents that look just like the original - complete with text, tables and graphics.

\$158

NUA0025 / Save \$31

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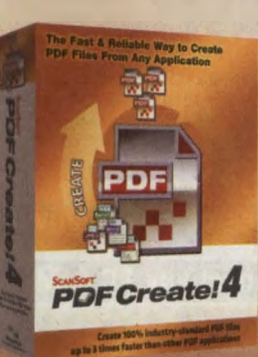


Nuance OmniPage 15

The latest version of the world's best-selling OCR software, is the most precise way to convert paper and PDF files into your favourite PC applications. Powerful new OCR technology, advanced layout analysis and intuitive editing tools allow you to quickly turn paper and PDF files into editable electronic documents that look just like the original - complete with text, tables and graphics.

\$249

SCA0044 / Save \$50



Nuance PDF Create! 4

ScanSoft PDF Create! is the fast, reliable and affordable way to turn all of your PC documents, drawings and images into industry-standard PDF files. Instantly create PDF documents that are compact and easy to email, can be universally viewed on the Web and that print just as if they came from the original application. PDF Create! also gives you all of the advanced features you need, including compressed file sizes, password security, 128-bit encryption

\$82

NUA0032 / Save \$17



Nuance PaperPort 11

PaperPort 11 is the easiest way to turn piles of paper & photos into organised PDF and JPEG files.

PaperPort produces perfect scans with the push of a button. Your documents are displayed as thumbnails on a unique visual desktop for fast browsing.

NUANCE

\$162

NUA0009 / Save \$37



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Imation Flash Media Cards

Imation now offers a range of Digital Memory Cards. Flash memory is used in many mobile phones, PDAs, video cameras, electronic devices etc and is the new media that is helping to pave the way for tomorrow's fully networked society. Digital Memory Cards are now available in capacities ranging from 256MB to 1GB.

Compact Flash (CF)

256MB (MMM2322) \$23

512MB (MMM2333) \$29

1GB (MMM2344) \$36



Secure Digital Cards (SD) (with adapter)

256MB (MMM2377) \$19

512MB (MMM2388) \$27

1GB (MMM2555) \$32



Multimedia Memory Cards (MMC)

512MB (MMM0404) \$27

1GB (MMM0403) \$43



Mini Secure Digital Cards (Mini SD) (with adapter)

256MB (IMA0036) \$19

512MB (MMM0407) \$28



Imation Nano Flash Drives 4GB

The Imation Nano Flash Drive can quickly and easily transfer, share and store almost any digital information, including photos, video and audio clips, web sites and business documents.

512MB (IMA0036) \$14

1GB (IMA0037) \$18

2GB (IMA0038) \$33



\$63

IMA0039 / Save \$14

Imation CD-R 52x Inkjet Printable Media 10 Pack

Imation CD-R discs store data swiftly and permanently with 1x to 52x write speeds. Our media offers you great performance with low failure rates. Store your images and photos, archive your data or create custom music mixes.



\$8

IMA0022 / Save \$2

DVD-R 16x Inkjet Printable 10 Pack

High capacity storage solution
Some things you create deserve to be preserved for all time, like a wedding video, or a great new software program. Choose Imation DVD-R to ensure your creative masterpieces won't be altered or erased. DVD-R, a write-once format, is capable of producing pre-mastering discs and is ideal for high volume data recording, archiving and playback.



\$11

IMA0035 / Save \$3

Wacom Graphire4 6X8 + BONUS Scrap Booking Advanced Kit

The new Wacom Graphire4 makes it fun and easy to do any graphic projects on your computer. With Graphire4, you can draw, sketch and illustrate. The creative freedom with the patented pressure sensitive pen technology makes a wide variety of projects easy from creating fantastic homepages and painting with brush-like control to detailed photo editing and retouching.

Included Software: Adobe Photoshop Elements3, Corel Painter Essentials2, Ulead Photo Explorer8, PenPlus

\$236

WAC9981 / Save \$53

BONUS
Neoprene Cover Bag



Wacom Intuos3 6x8 Student Seriously-enhanced, Interactive & Creative

Intuos3 is the industry standard graphics tablet for digital art, animation, image editing and computer graphics. The Intuos3 features ExpressKeys and Touch Strip(s) can substitute all common modifiers and shortcuts, whilst the ergonomic pen delivers professional level functionality.

64 Degrees of tilt Sensitivity

USB Connectivity PC & Mac

\$327

WAC9983 / Save \$22

*Offer available from 1st May 2007 - 30th June 2007

Wacom Graphire Bluetooth (6x8) - Wireless Freedom Academic

With the new Graphire Bluetooth you have the ability to do pen based drawing, sketching, illustration and powerful presentations where and when you want - without any annoying cabling. A battery life of up to 25 hours, two on-tablet programmable ExpressKeys designed to optimize workflow by providing quick access to commonly used modifiers, mouse-clicks.

WACOM

\$367

WAC9980 / Save \$33

BONUS

• This pack includes bonus 90 sheet 8x8 Paper Block, acid and Lignin Free, in 30 different designs, valued \$40

• Bonus Image Blender3 Software valued at \$69.95

Wacom Graphire4 4X5 + BONUS Scrap Booking Starter Kit

The Wacom Graphire4 4x5 pen tablet is the ideal tool for enhancing digital photos, adding borders, graphics, text and special effects, to dramatically increase Scrapbookers' creative options. Working digitally allows you to experiment with different combinations without affecting your original files or making costly mistakes. Give your scrapbooks the digital edge!

Included Software: Corel Painter Essentials2, PhotoImpact 10, PenPlus

\$127

WAC9982 / Save \$22

STORAGE & APPLE HARDWARE

Passport 2.5" Portable 160GB

Ultra portable, the WD Passport Portable USB Hard Drive weighs only a few ounces and holds tons of valuable data. No need to carry a power supply; the drive is powered directly through the USB cable, and the glossy-black case with soft-touch base is designed to protect your data. Includes synch & encryption and Google software.

- 60GB (WDD0076) \$96
- 80GB (WDD0077) \$123
- 120GB (WDD0078) \$171



WD Western Digital **\$188**
WDD0079 / Save \$12

My Book Premium 500GB

Small, elegant, and easy to use, My Book Premium USB/FireWire external hard drives from WD. Includes backup software, capacity gauge and room for all your valuable data, music, photos, and movies.

320GB (WDD0080) \$232



\$284
WDD0081 / Save \$16

My Book Premium II 1TB

WD's My Book Premium Edition II dual-drive storage system offers RAID mirroring for extra data protection or RAID striping for extraordinary capacity and performance.



\$623
WDD0082 / Save \$27

Apple Mac Mini

Mac Mini provides an affordable entry to the world of Mac. Mac Mini PC's feature Intel Core Duo CPU's and Apples iLife Suite, Wireless, Bluetooth Connectivity and a choice of either Combo CDRW - or Super DVD-R Drives.

- Processor** Intel Core Duo 1.66 GHz
- Memory** 512MB DDR II 667MHz (2GB max)
- Video Card** Intel GMA 950
- Hard Drive** 60GB SATA 150
- Optical Storage** CD-RW / DVD-ROM combo
- Display** Optional
- Connectivity** Gigabit Ethernet / Wifi / BT
- Operating System** Apple MacOS X 10.4



\$919
APP0232 / Save \$30



Apple iMac

- Processor** Intel Core 2 Duo 2.0 GHz
- Memory** 1GB DDR II 667MHz (3GB max)
- Video Card** ATI Radeon X1600 PCI 128MB MB Express x16
- Hard Drive** 160GB SATA 150
- Optical Storage** DVD±RW (+R double layer)
- Display** Flat panel display 17" TFT
- Connectivity** Gigabit Ethernet / Wifi / BT
- Operating System** Apple MacOS X 10.4

Apple Authorised Reseller \$1796
APP0229 / Save \$53

Apple MacBook

- Processor:** Intel Core 2 Duo 1.83 GHz
- Memory:** 512MB DDR II 667 MHz (2 GB max)
- Video Card:** Intel GMA 950
- Hard Drive:** 60GB SATA 150 5400 rpm
- Optical Storage** CD-RW/DVD-ROM Combo
- Monitor:** 13.3" TFT 1280 x 800
- Connectivity:** Gigabit Ethernet / Wifi / BT
- Operating System:** Apple MacOS X 10.4



\$1676
APP0253 / Save \$73

Apple TV

iTunes to Apple TV, wire free.

Apple TV connects to your TV via an HDMI port or component video and audio ports. Its built-in, super fast 802.11 wireless capability syncs your iTunes library to any Mac or PC in the house. Best of all, what's on Apple TV stays in sync: Anytime you change your library in iTunes, it changes on Apple TV — wirelessly, automatically.



\$438
APP0259 / Save \$11

Apple iPod Nano 4GB

With its new anodized aluminium enclosure and rounded edges, iPod Nano looks as dazzling as it feels. And it's sleeker than ever - 3.5 inches tall, 1.6 inches wide, and just over quarter of an inch thin. Play your music even longer between charge



\$288
APP0236 / Save \$11



Microsoft

Licensing

Microsoft Volume Licensing

Microsoft Volume Licensing for Small/Medium business (5-250 PCs)

Microsoft Open License is a simple and flexible software volume licensing program designed for customers who order as few as five licenses.

Open License benefits include:

- Significant discounts over full retail prices.
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- Easier management of license portfolios with eOpen (electronic license management)

Choose the Open License Program that's right for you

The Microsoft Open License program offers you three great ways to save on Microsoft products:

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Open Business is for companies looking to save money without a large up-front volume commitment. The initial order is five or more licenses for any combination of Microsoft products. You can place reorders for two full years and enjoy discounts (as compared to estimated retail prices for Full Packaged Product). There is no minimum reorder quantity.

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Microsoft Open Value is a premium volume licensing offer available under the Open License family. Designed for organisations with as few as five computers, Open Value offers simpler license tracking, greater control over the software upgrade cycle, and better software cost management.

Open Value also offers the advantages of Software Assurance (SA), which includes new version upgrades, technical training, user training, partner services, and product support. These benefits are available through the term of the agreement to improve software resource planning, ROI measurement, and IT professional and user productivity.

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- No signed agreement.
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WPC300N Notebook Adapter



WAG325N Wireless-N ADSL2 + Gateway

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